

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

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LONDON, SATURDAY, MARCH 4, 1876.

WITH SUPPLEMENT. PRICE SIXPENCE. PER ANNUM, BY POST, £1 4s.

**JAMES H. CROFTS, STOCK AND SHARE BROKER,**  
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.  
Established 1842.

Business transacted in all descriptions of MINING Stocks and Shares (British and Foreign), Consols, Bonds (Foreign and Colonial), Railways, Miscellaneous, Insurance, Assurance, Telegraph, Shipping, Canal, Gas, Water, and other securities.  
Business negotiated in Stocks and Shares not having a general market value.  
Business in all COLLIERIES and IRON SHARES, and in the principal WAGONS and FACTURING COMPANIES OF THE NORTH OF ENGLAND AND SCOTLAND.  
J. H. CROFTS, having now established CORRESPONDING AGENCIES in all the principal towns of the United Kingdom, is prepared to deal in the various LOCAL Stocks and Shares at close market prices.  
Accounts opened for the Fortnightly Settlement.  
Monthly and Daily Price Lists issued.

Bankers: City Bank, London; South Cornhill Bank, St. Austell.

DEALINGS in the following SHARES:—

|                 |                       |
|-----------------|-----------------------|
| East Van.       | Pateley.              |
| Emma.           | Palmers Shipbuilding. |
| Flagstaff.      | Plympton.             |
| Glyn.           | Rookhope Valley.      |
| Great West Van. | Roman Gravel.         |
| Javali.         | Richmond.             |
| Llanrwst.       | St. Patrick.          |
| Monydd Gorrdu.  | Sweetland.            |
| Marke Valley.   | Tankerville.          |
| Old Treburgett. | Van Consols.          |
| Penrith.        | West Craven Moor.     |
| Parys Mountain. | West Chiverton.       |
| Pennant.        | Wheal Grenville.      |

FOR SALE (to close an account), 25 St. Patrick, cheap.  
Business in POSITIVE ASSURANCE SHARES.  
Shares sold for forward delivery (one or two months) on deposit of 20 per cent. on hand in all the leading TIN, COPPER, and LEAD SHARES.

**EGYPTIAN AND TURKISH BONDS.—SPECIAL BUSINESS.**

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**RAILWAYS.—SPECIAL BUSINESS.** Fortnightly accounts

opened on receipt of the usual cover.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**R. WILLIAM H. BUMPUS, STOCK AND SHARE BROKER,**

44, THREADNEEDLE STREET, LONDON, E.C.

Established 1847.

PURCHASES and SALES effected, on the best possible terms, in—  
SOILS, RAILWAYS, FOREIGN BONDS, and STOCK EXCHANGE  
SECURITIES of every description for INVESTMENT or SPECULATION.  
Accounts opened for the Fortnightly Settlement on receipt of the usual cover.  
References given and required when necessary.

A STOCK and SHARE LIST sent FREE on application.

Bankers—The NATIONAL PROVINCIAL BANK OF ENGLAND, E.C.

J. B. has SPECIAL BUSINESS, at close market prices, in the SHARES of the principal HOME and FOREIGN MINES, including:—  
East Van, Van Consols, Glyn, Great West Van, Great Laxey, North Laxey, Gravel, Tankerville, West Tankerville, Ladywell, Pateley Bridge, West Van, Parys Mountain, East Caradon, Marke Valley, Wheal Agar, Wheal Grenville, Argentine, Condes de Chili, Eberhardt, San Pedro, and Creek, &c.

**MINING INVESTMENTS.—BRITISH LEAD MINES.**

Profits may be realised during the next few months by the judicious purchase of Shares in Sound Dividend and Progressive Mines at present prices. Mr. Bumpus is in a position to give reliable information and advice respecting the same, and will forward on application a carefully-selected List of Shares, which will rise considerably in market value.

Leading purchasers of Aberdaunt, Bampfyde, Llanrwst, and Monydd Llanrwst should apply to Mr. BUMPUS, who can execute orders in all the above Shares on favourable terms.

OFFICES: 44, THREADNEEDLE STREET, LONDON, E.C.

**ORDINAND R. KIRK, STOCKBROKER,**

5, BIRCHIN LANE, E.C.

ALL BUSINESS at best prices in—

|                |                           |                 |
|----------------|---------------------------|-----------------|
| Shares.        | Iron Companies.           | Home Mining.    |
| Consols.       | Cotton & Wagon Companies. | Railways.       |
| Foreign Bonds. | Foreign Mining.           | Foreign Mining. |

Cheques should be crossed "London and Westminster," Lothbury.

**IN RISLEY (SWORN), STOCK AND SHARE BROKER,**

77, CORNHILL, LONDON.

Business transacted at the following rates of commission:—Foreign Stocks, 1/4 per cent. and Mining Shares of 44 each and upwards, 1 1/2 per cent.; under 44, 1s. 6d.

**MESSRS. A. ENDEAN, FISHER, AND CO., STOCK AND SHARE DEALERS,**

2, LOMBARD COURT, LOMBARD STREET, E.C.

Bankers: London and Westminster, Lothbury.

**MESSRS. BLYTH AND HUTCHINSON,**

STOCK AND SHARE BROKERS,

3, GEORGE YARD, LOMBARD STREET, LONDON.

Business in all kinds of Stock Exchange Securities, also in Mining Shares of every description; and will give any information respecting them on application. Monthly and Daily Price Lists issued.

Bankers: Alliance Bank.

**MESSRS. HARVEY, JORDAN, AND CO.,**

MINING ENGINEERS AND AGENTS, ACCOUNTANTS, AUDITORS,

MANAGERS OF PUBLIC COMPANIES, &c.

in connection with Messrs. TRAIL, FOSTER, and Co., Georgetown, Colorado.

Mineral Properties Inspected.

LONDON OFFICES—30, MOORGATE STREET, E.C.

THE LANTERN TINT PLATE WORKS.

THE PLANET SILVER MINING CO.

**R. W. MARLBOROUGH, STOCK AND SHARE DEALER,**

29, BISHOPSGATE STREET, LONDON, E.C. (Established 19 Years).

The following SHARES, at prices annexed:—  
Aberdaunt, £1 11s. 3d.  
Cathedral, £1 11s. 3d.  
Cathedral, £1 11s. 3d.  
Cathedral, £1 11s. 3d.  
Cathedral, £1 11s. 3d.  
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Cathedral, £1 11s. 3d.  
Cathedral, £1 11s. 3d.

Bankers: London and Westminster, Lothbury.

**R. GEORGE BUDGE, STOCK AND SHARE DEALER,**

No. 4, ROYAL EXCHANGE BUILDINGS, LONDON, E.C.

(Established 25 Years.)

Business in—50 Monydd Gorrdu, 50 Llanrwst, 5 West Craven Moor, 50 Cate-  
lly, 100 Gold Run, 50 Great West Van, 10 East Van, 100 Aberdaunt,  
50 Cedar Creek, 50 Cathedral, 50 Glyn, 130 West Milw, 100 St. Patrick,  
50 Andes, 50 Central Minors, 50 West Wye Valley, 30 Grogwinion, 100  
50 Consols, 70 Old Treburgett, 300 Port Phillip, 150 New Rosario, 50 Camp  
50 North Laxey, 20 Pateley, 80 Welsh Consols.

ALL BUSINESS in Chapel House, Aberdaunt, Pennant, Exchequer,  
50, and North Cornhill Lead as a buyer and seller at close prices.

**INVESTMENTS IN BRITISH LEAD MINES.—**

**BRITISH AND FOREIGN MINING NEWS**

STOCK AND SHARE INVESTMENT NOTES—

MINES, MINERALS, AND METAL MARKETS—SHARE LIST,

FOR JANUARY.

Annual subscription, 5s.; single copy, 6d.

**MESSRS. PETER WATSON AND CO.,**

STOCK AND SHARE DEALERS,

79, OLD BROAD STREET, LONDON, E.C.

Bankers: The Alliance Bank (Limited).

N.B.—February Number ready on 1st March, which will be sent on application.

**MR. ALFRED E. COOKE, STOCK AND SHARE DEALER,**

76, OLD BROAD STREET, LONDON.

(Established 1853.)

BUSINESS transacted in all LEAD SHARES at closest market price of the day. Early advice should now be sought concerning the next shares to rise.

Mr. COOKE issues daily price-lists both of Stock Exchange and Mining Shares, which will be forwarded on application.

STOCK EXCHANGE SPECULATION OR INVESTMENT.—Best information given, and Fortnightly accounts opened. Terms on application.

All Investors in Railways, Foreign Stocks, and Mines should consult the "INVESTORS' GAZETTE," published this day. Post free for three stamps of Mr. A. E. COOKE, 76, Old Broad-street, London.

**MR. T. E. W. THOMAS, SHARE BROKER,**

3, GREAT WINCHESTER STREET BUILDINGS, E.C.

Established 1857.

The following are the latest prices at which business could be done. Where the difference between the buying and selling price is wide transactions may be effected at an intermediate price:—

| Buyers.                | Sellers. | Buyers.               | Sellers. |
|------------------------|----------|-----------------------|----------|
| Argentine Gold (prem.) | £ 1 1/2  | Pateley Bridge        | £ 5 1/2  |
| Birdseye Creek         | 1 1/2    | Pennerley             | 1 1/2    |
| Chapel House           | 3 1/2    | Penrith               | 8s.      |
| Great Consols          | 4 1/2    | Plympton              | 10s.     |
| Eberhardt              | 1 1/2    | Rochford              | 10s.     |
| East Caradon           | 1 1/2    | Roman Gravel          | 14s.     |
| East Van               | 19       | Rookhope Valley (new) | 1 1/2    |
| Emma                   | 2 1/2    | Santa Barbara         | 1 1/2    |
| Exchequer Gold         | 1 1/2    | San Pedro             | 3 1/2    |
| Flagstaff              | 1 1/2    | South Condurrow       | 4        |
| Glyn                   | 1 1/2    | Sweetland Creek       | 2 1/2    |
| Great Laxey            | 1 1/2    | Tinctor               | 11 1/2   |
| Great West Van         | 1 1/2    | Unity Wood            | 17       |
| Hingston Down          | 1 1/2    | Van                   | 41       |
| Javali                 | 10s.     | Van Consols           | 2 1/2    |
| Ladywell               | 2 1/2    | West Craven Moor      | 10 1/2   |
| Marke Valley           | 3        | West Tankerville      | 2        |
| North Laxey            | 1 1/2    | Wheal Agar            | 2        |
| New Quebrada           | 3 1/2    | Wheal Crebor          | 2        |
| Old Treburgett         | 7s. 6d.  | Wh. Kitty (St. Agnes) | 1 1/2    |
| Parys Mountain         | 16s.     |                       |          |

N.B.—Special Business in the shares of the Aberdaunt Lead Mining Company (Limited), working on the Van and East Van lodes.

**MR. WILLIAM WARD**

(LATE WARD AND LITTLEWOOD),

CROSBY HOUSE,

95, BISHOPSGATE STREET WITHIN, E.C.

STOCK AND SHARE BROKER.

**G. E. SIMPSON, STOCK AND SHARE DEALER,**

SELL the FOLLOWING SHARES, free of commission:—

|                          |                               |                                 |
|--------------------------|-------------------------------|---------------------------------|
| 40 Argentine, £7 1/2.    | 35 Glyn, £2 1s. 3d.           | 20 Richmond, £6 1/2.            |
| 50 Aberdaunt, 22s. 6d.   | 50 Great W. Van, 13s.         | 30 Rookhope, 26s.               |
| 25 Alamillos, £2 1/2.    | 40 Gold Run, 15s.             | 20 S. Condurrow, £4 18 9        |
| 50 Blue Tent, 44 1/2.    | 70 Javali, 9s. 6d.            | 50 Santa Barbara, 29s. 6d.      |
| 60 Birdseye Creek, £2.   | 20 Llanrwst, £4 1/2.          | 40 Sweetland, £2 18s. 3d.       |
| 50 Colorado, £1 18s. 9d. | 50 Ladywell, £2 8s. 9d.       | 100 Talbot, 17s. 6d.            |
| 40 Chapel House, £3 1/2. | 40 Marke Valley, £3 3s. 9d.   | 30 Tankerville, £12.            |
| 5 Cape Copper, £39.      | 70 North Laxey, 28s. 9d.      | 15 Van, £42.                    |
| 70 Cedar Creek, 17s.     | 30 Oregon, £4 1/2.            | 30 Van Consols, £2 13s. 9d.     |
| 10 East Van, £18 1/2.    | 50 Pennerley, £1 8s. 9d.      | 25 West Pateley Bridge, £2 1/2. |
| 25 Eberhardt, £3 3s. 9d. | 70 Pateley Bridge, £2 1s. 3d. | 10 West Craven Moor, £2 1/2.    |
| 50 Exchequer, £1 2s. 6d. | 40 Pennant, £5 3s. 9d.        | 30 W. Tankerville, £2 1/2.      |
| 50 Fortuna, £2 1/2.      | 70 Plympton, 10s.             |                                 |
| 40 Frontino, £2 1/2.     | 10 Roman Gravel, £14 8s. 9    |                                 |
| 30 Grogwinion, £5 1/2.   |                               |                                 |

**MESSRS. ENDEAN AND CO., STOCK AND SHARE DEALERS,**

85, GRACECHURCH STREET, LONDON, E.C.

Government and every negotiable Stocks dealt in for cash or account. Orders and telegrams punctually attended to.

The Van Mine, returning about 700 tons of mineral per month, paying good dividends, now the East Van having cut rich. The Aberdaunt, on the same lode, in about 12 fms. sinking is likely to be of equal value, and the shares should be purchased whilst they can be had so cheaply. They have a longer run on the lode than the Van or East Van.

Our Bureau and Guide to Investments, with a plan of Van district. Price 6d.; free to clients.

SHARES FOR SALE in the Aberdaunt, Llanrwst, Van, and East Van, and all the leading Lead Mines.

**MR. JAMES STOCKER, STOCK AND SHARE BROKER,**

2, CROWN COURT, THREADNEEDLE STREET, LONDON, E.C.

(Established 1845.)

BUSINESS transacted in all kinds of STOCK EXCHANGE SECURITIES,

also in every description of BRITISH and FOREIGN MINING SHARES.

SPECIAL BUSINESS in the following:—

|                        |                     |                      |
|------------------------|---------------------|----------------------|
| Van.                   | Ashton.             | Cathedral.           |
| Van Consols.           | West Tankerville.   | West Chiverton.      |
| Grogwinion.            | Pennerley.          | Marke Valley.        |
| West Wye Valley.       | Wheal Crebor.       | Hingston Down.       |
| Chapel House Colliery. | South Roman Gravel. | West Pateley Bridge. |

Eberhardt. Emma. Richmond.  
Flagstaff. San Pedro. Chontales.  
Port Phillip. Frontino. Teocoma.  
Almaden. Sweetland Creek. Cedar Creek.

Public attention is evidently turned to good Mining Enterprises, which afford great profits with small outlay. A large business is being transacted in the following:—  
East Van, Roman Gravel, Tankerville, Pateley Bridge, Great Laxey, Ladywell, Aberdaunt, Penrith, Wye Valley, Old Treburgett, Bampfyde, Pennant, Wheal Grenville, Argentine Gold, Blue Tent, Exchequer, &c.

FOR SALE, at annexed prices, net:—  
25 Pennerley, 27s. 6d.  
40 Plympton, 10s. 9d.  
20 Richmond, 46 1/2.  
35 West Ashton, 31s. 3d.  
50 Santa Barbara, 28s. 9d.

|                        |                             |
|------------------------|-----------------------------|
| 20 Pateley Bridge, £8. | 30 Don Pedro, 8s.           |
| 45 Nth. Laxey, 28s.    | 50 Gold Run, 17s.           |
| 20 Rookhope, 26s.      | 25 Parys Mountain, 17s.     |
| 50 Javali, 9s. 9d.     | 40 Ashton, 31s. 3d.         |
| 50 Bog, 3s.            | 15 West Pateley, £5 3s. 9d. |

**JAMES STOCKER, SWORN BROKER.**

Consols, Foreign Bonds, Railways, Bank, Telegraph, Gas, and all miscellaneous Shares bought and sold, and fortnightly accounts opened for same. Shares sold for forward delivery on receipt of cover. List of prices and every information forwarded on application.

BANKERS: LONDON AND WESTMINSTER.

**MR. CHARLES THOMAS,**  
MINING AGENT, STOCK AND SHARE DEALER,  
3, GREAT ST. HELEN'S, LONDON, E.C.

**MESSRS. A. W. THOMAS AND CO.,**

MINING AGENTS, AND STOCK AND SHARE DEALERS.

A. W. T. and Co. are BUYERS of Whitehaven Iron and Aberdaunt; the best price given for the latter.

LLANRWST AND ABERDAUNT.—From the large number of shares which have been dealt in each of these mines during the past week, we anticipate an advance in market value. We are prepared to deal in any number of shares in either, as buyers or sellers, at the closest market price.

Our annual pamphlet, entitled "Investments and Speculations for 1876," is now out of the printer's hands. Copies may be obtained upon application to us.

**MESSRS. T. VOSPER AND CO.,**

MINERAL AND GENERAL ESTATE AGENTS.

48, FINSBURY CIRCUS, LONDON.

MINES and PROPERTIES of all descriptions BOUGHT and SOLD.

DEALERS in STOCKS and SHARES.

Most reliable information obtained.

Special Business in Freehold and Leasehold Estates, also Lead, Copper, and China-Clay Companies.

ESTABLISHED TEN YEARS.

**MR. E. J. BARTLETT, STOCK AND SHARE DEALER.**

No. 30, GREAT ST. HELEN'S, LONDON, E.C., has SPECIAL BUSI-

NESS in St. Patrick, Wheal Kitty, South Condurrow, Wheal Whisper, Pennerley, South Tolarne, East Lovell, East Van, Llanrwst, East Caradon, West Craven Moor, and Bampfyde shares at close prices.

Capitalists who seek Safe and Profitable Investments should act only upon the soundest information. The market prices for the day are, for the most part, governed by the immediate supply and demand, and not always by the bona meritis of the properties.

Mr. E. J. BARTLETT devotes special attention to every class of securities.

**MR. THOMAS THOMPSON, JUN., 1, PALMERSTON**

BUILDINGS, BISHOPSGATE STREET, LONDON, E.C.

Some valuable hints as to the purchase of mining shares will be found in Mr. Thompson's "Investment Circular" for Feb. now ready, post free, price 6d.

**MR. JAMES HUME, 91, LONDON WALL, LONDON,**

TRANSACTS BUSINESS in RAILWAYS and OTHER SECURITIES for the fortnightly settling; also in MINES, comprising the following:—Tankerville, West Tankerville, Pennerley, East Van, Van Consols, Aberdaunt, Pateley Bridge, Argentine, Eberhardt, Richmond, Emma, Flagstaff, &c.

Prices current, and other particulars on application.

**MESSRS. E. KINS AND CO.,**

STOCK AND SHARE DEALERS.

14, QUEEN VICTORIA STREET, MANSION HOUSE, E.C.

Bankers: Metropolitan and National.

**MESSRS. J. TAYLOR AND CO., 86, LONDON WALL,**

LONDON, E.C.

MINING ENGINEERS AND INSPECTORS.

MEMBERS OF MCLAN'S.

Business done in all descriptions of Stocks and Shares.

FOR SALE, 50 Aberdaunt, at £1.

**LEAD MINES—MINING SUCCESSES—MINING FAILURES—**

UNFORTUNATE and FORTUNATE SPECULATIONS—RAILWAYS—  
FOREIGN MINES—GAS COMPANIES—UN SOUND COMPANIES, &c. In  
formation on the above will be found in Reynolds's Select List, now ready.

Forwarded gratis on application to—

JOHN B. REYNOLDS, STOCK AND SHARE DEALER,

70 AND 71, BISHOPSGATE STREET WITHIN, LONDON, E.C.

**MESSRS. W. J. TALLENTIRE AND CO.,**

STOCK AND SHARE BROKERS.

20, CHANGE ALLEY, CORNHILL, LONDON, E.C.

Transact business in Stock Exchange Securities and Mining Shares of every description, either for immediate cash or the usual bi-monthly settlements, and also afford advice personally or by letter to executors, trustees, capitalists, and investors of every class in the selection of Securities for safe and profitable investment, their experience of the markets, extending over a period of more than sixteen years, together with special facilities for acquiring information, enabling them to act beneficially for clients.

They have established Corresponding Agencies in all the principal towns of the United Kingdom, and are prepared to deal in the various local Stocks and Shares at close prices. Orders per post or telegraph receive prompt attention.

INVESTORS SHOULD APPLY for a copy of Messrs. W. J. TALLENTIRE and Co.'s Circular for February, SENT POST FREE. It contains valuable information on Foreign Stocks (especially South American, Egyptian, and Turkish), Railways, and Lead Mines.

**MESSRS. HARLAND AND CO., STOCK AND SHARE DEALERS,**

235 and 236, GRESHAM HOUSE,

OLD BROAD STREET, LONDON, E.C.

Bankers: London and County Bank

Messrs. H. and Co. have Special Business in Chapel House and Alltami Collieries Shares, also in the shares of the Oregon Gold, and the Patent Ligno Mineral Paving Companies, and will be happy to give full particulars of the above desirable investments on application.

Dealings at closest market prices in all kinds of Stocks and Shares.

**GROGWINION LEAD MINE (LIMITED).**

**MESSRS. H. HALFORD AND CO., STOCK AND SHARE**

BROKERS, OF EXCHANGE CHAMBERS, CHANGE ALLEY,

LOMBARD STREET, LONDON.

Strongly recommend the ABOVE MINE as one of the BEST and SAFEST MINING INVESTMENTS. The dividends are declared half-yearly—the one for the last half year was 12 1/2 per cent.; the next one will probably be 30 per cent. The "reserves" are valued at £200,000. Every information upon application to the above.

Daily Closing Price Lists of Mines and all other Securities sent post free on application.

Messrs. H. and Co. are BUYERS of Shares in GROGWINION MINE, and also of Shares in WYE VALLEY LEAD MINE; and they will be GLAD TO HEAR from BROKERS or DEALERS who have ANY FOR SALE.

**MR. TIMOTHY HUGHES,**

59, SEEL STREET, LIVERPOOL.

The Registered Office of the PRINCE PATRICK GROSVENOR, WEST BRUNCELYN, CENTRAL FOXDALE, and GREAT EAST FOXDALE LEAD MINING COMPANIES (LIMITED).

Full information respecting these Mines forwarded on application.

RELIABLE INFORMATION given respecting Mines in the Isle of Man, Flintshire, and the neighbouring districts.

**MR. W. F. STANLEY, MATHEMATICAL INSTRUMENT</**



## Royal School of Mines.

## PROF. SMYTH'S LECTURES ON MINING—No. XVII.

[BY OUR SPECIAL REPORTER.]

The application of the wedge, if followed out into details, would be a very extensive subject, but its employment depends so much on local conditions and local experience that we can only here examine the matter quite generally. As one of the simplest uses of it we may refer to the breaking away of large masses of stone; and there is, perhaps, no more remarkable example of this use than can be seen at the famous Box quarries, near Bath. In some granite works, too, the application of the wedge to this purpose is maintained, and although in some details it varies somewhat from that adopted by the ancients, still on the whole the method has a very great similarity in both cases. In one respect, however, there was, probably, a difference—in the great use of steel tools in modern times, whereas it is a matter of uncertainty whether that material was used in those works. The manner of using the wedge will be governed by a knowledge of the tendency of the rock under treatment to split in certain directions; in the case of detaching a mass of rock from the face of a quarry, for example, a groove will be cut along the upper surface in the proper direction, and then a series of wedges driven in these, and another series along the floor of the mass. As the wedges are being driven in a certain interval will be left after each blow, in order that the force—or crack, as it were—may propagate itself. The object in many of these cases is to obtain the blocks without the use of gunpowder, which would shatter, and perhaps injure, the structure; consequently, the use of wedges is preferred.

Another plan is that of boring holes into the rock in proper position, and then inserting wedges of dry wood; these wedges are afterwards moistened, or left to the action of dew, &c. The famous French burr stones are obtained in this way by the use of wooden wedges. In the slate quarries wedges of various kinds come into play very importantly; and nothing, perhaps, is more striking than to observe in different quarries the different results which can be effected by the use of the wedge in the hands of skilful and experienced men, who know in which way the block may be expected to break. The blocks of slate are obtained from the quarry with the use of as little powder as possible, and after having been brought to a proper size will be split into wonderfully thin laminae by the means of the wedge. Large masses of slate are broken into two parts previous to being split into laminae, by cutting a groove on one surface, then turning over the mass and cutting a corresponding groove on the other, laying a piece of broken slate over the groove, and striking a powerful blow on this with a heavy sledge. The mass splits with a straight smooth section, but this depends in great part on the nature of the slate, some kinds not being able to be thus worked, as, for example, those which break with a more or less conchoidal fracture. There is a considerable variety in the character of the tools used for wedging, according to the varying circumstances under which they are required to be used. The Cornish gad, together with a pick, is held by a handy man to be the most serviceable implement, where an unhandy man would think of using powder. The same is the case with those small German wedges, driven by a single-handed hammer. A skilful man will produce a wonderful effect with the tools, while an unskilful one would be thinking of blasting. Where the ventilation is bad, or where there is cause to avoid the shaking of the rock, powder cannot be used, and the work must be done by tools; under other circumstances, however, we can have recourse to the more powerful agent. The district of St. Just and neighbourhood is notable for the handiness of the men at single-handed work, and there a great deal of work is done, with the assistance of a class of wedges of a peculiar character, rendered necessary by the narrowness of the veins and galleries. They are noted for the employment of a couple of implements: one of them is the picker, a long flatish wedge, which can be inserted at arm's length if necessary, and used partly as wedge, partly as crowbar; the second one is of a similar character, but shorter, and is called a holer. A somewhat similar instrument is found in other parts of Cornwall, and is of much use for working under water. In sinking a shaft it may be necessary to make a small cutting into the wall, in order to rest some apparatus—perhaps heavy pumping apparatus—on; obviously powder cannot be used, since it would shatter the ground about, and render it anything but a firm and safe foundation; however hard it may be, it must be cut with a wedge of some kind or other. Corresponding tools in German mining are the *Schlagel*, answering to the hammer, and *Eisen* to the wedge.

Within the last few years much attention has been given to the question whether it is not possible to do without gunpowder in the getting of coals. For many years past it has come to be the general practice for the men to substitute blasting for the system of wedging described in the last lecture, and this especially if the coal be hard, the powder being introduced at the top of the coal after the mass has been holed at the bottom. It is an easier method, and, therefore, the men prefer it; but leaving aside the fact of the shaking of the coal, there is the question of the security; and there can be no doubt that during the last few years many catastrophes have resulted from its use. But where the men using their picks find that those who use powder get on faster and earn more wages, they are apt to say that the cannot get on without it, and the masters have, consequently, had to give way in many cases. The question, therefore, arises whether it is not possible by some improved form of wedge to obtain a much greater power than with the ordinary wedge, and one or two very admirable attempts have been made to solve this question. Amongst these may be mentioned those of Mr. Bidder and Mr. J. G. Jones. Mr. Bidder proposed to bore at intervals along the face of the coal a set of holes by means of a powerful auger, the hole being about 2 feet long and 3 to 4 inches diameter, and bored in a very short time—about 25 minutes. Into these holes were to be inserted a series of iron cheeks, and then a number of long wedges were to be forced in between the cheeks by means of a small Bramah press, which was constructed so as to be easily carried about by two men. The method suggested by Mr. Jones was to introduce a cylinder into the aperture at the top of the coal, from which cylinder a number of little pistons projected above and below. By means of the pressure of water, derived from an ordinary Bramah press, the pistons were made to project more and more, until at last the pressure was sufficient to force down the mass. By this plan, as also that of Mr. Bidder, it was held that the coal could be got down without any trouble of holing at all. A number of engineers who visited this apparatus in action reported very favourably on it, but the lecturer was sorry to have to express a belief that up to the present time all these attempts have been unsuccessful. There are certain difficulties attending their use, and if they have been found successful in any particular district, it is because circumstances there have been particularly favourable. This is undoubtedly a great problem, and if solved satisfactorily would lead to the introduction of a very great safeguard into our collieries. The action of the pick would appear to be so simple that it ought not to be difficult to replace it by a machine, and in late years several machines have been so introduced for getting the coal, some on the principle of the pick, others on the principle of the saw. It is now about 30 years since that an intelligent mine manager, Mr. Pease, proposed an arrangement and set a machine to work for this purpose. The men, partly, no doubt, by way of derision, called it the Iron Man, and right glad were they when it fell to pieces. And many of the machines since brought forward have been treated very liberally and with much opposition; and partly from this cause, partly perhaps from the nature of the machines themselves, one cannot at the present time point to a single machine working over a large area. Some of them have failed because they required so much time in getting into place and adjusted before work could be commenced, and other similar causes. Those introduced by Mr. Firth, Mr. Lennox, &c., apply the pick principle, the pick being swung backward and forward, and the machine being moved forwards a little after each blow, the whole traversing on rails in front of the coal. It could very soon cut a hole 3 feet deep,

with a height of 4 or 5 inches, sometimes this height being obtained by two or three separate cuts of 1½ or 2 inches deep. There was a great saving of coal in this manner, which the miner would have cut away in the front of the hole, in order to get in conveniently to work the rest. Another principle on which some of them (as, for example, the Gartscherrie machine) are constructed is that of the circular saw; a chain carrying a series of small cutters running round a wheel, and being carried along the face of the coal. We cannot compare these different machines one with the other until they have all been tried in a similar kind of coal; their use is so local at present that we can only regard them so far as experiments on a large scale.

We come next to the subject of dealing with ground of a harder character, where some of those objections to the use of gunpowder do not occur, where it does not matter about shattering the ground more or less, and where no fiery places are present. We must examine the implements used in preparing the holes for the blasting purposes, and at the outset we may draw a considerable distinction between those which are intended for use in places where there is plenty of room and those to be used in restricted spaces; and between those to be used for bore-holes almost entirely vertical and those for horizontal ones. The introduction of gunpowder for these operations of blasting in mining is but of very recent date in this country—late in the 17th century. It was first employed at what afterwards became the famous Ecton Mines, in North Staffordshire, and for a long time it only partially supplanted the use of wedges. It was proposed at Freiberg in 1613, but was not employed till 1632, and then its use was for a long time confined to Saxony and the Harz. At first it was only employed to take down masses of rock which were partially freed by other means; there was no idea of taking down the whole mass by a succession of blastings. The introduction of powder has been one of the greatest boons the miner has received; it has not merely enabled him to make more rapid progress, but it has led generally to larger levels, larger workings, and also in a surprising degree to a better system of ventilation, and consequently to the improved health of the men. Still we must not forget that very much good work was done before the introduction of powder, and in some of the old workings—as those of Derbyshire—we can see signs of the skilful manner in which a good workman could handle his pick; beautiful smooth surfaces, with a pattern of parallel curved line, perfectly regular, formed by the strokes of the implement. Among the tools used for making these holes we have, first, a long iron bar, with a cutter at each end; the bar is 5 or 6 feet long, with a swelling towards the middle, for convenience of holding, and for giving sufficient weight to the tool. It is called a jumper, or borer, or auger, and is employed for boring holes, vertical or inclined, at a small angle only. One end cutter is commonly wider than the other, so that you can commence a hole with the wider one, and then after a certain distance, or on meeting with a small obstacle, may continue it with the other end. It is raised a certain distance by the hand, and then allowed to fall, and the fragments of broken rock are removed by having the hole full of water, or the larger ones by means of a small tool called the scraper; or it may be with a pair of simple tongs, having the arms closed by means of a ring at the end of a moveable bar. In most mining operations in nearly all districts the common instrument is a boring bar, called in the south-west districts a borer, in other parts a drill, mandril, auger, or jumper; or, again, in Germany a *Bohrer*, in France a *fleur* or *pistolet*. It consists in the main of a bar of iron or steel, with a cutter at one end, and the other end intended for receiving blows from a hammer.

When this instrument was first opened for purposes of instruction the bars universally employed were of best bar iron, tipped with double shear steel at each end; since that time a wonderful change has taken place, and bars now being made entirely of cast-steel. The chief points to be looked to are that the bit is not beaten out too fine, according to the nature of the ground, the form of the bit, and the angle a transverse section would present. The form of the bit varies; sometimes it has nearly, or quite, a straight edge, at others it is much curved. Almost universally now the bit is single, but formerly it was the custom to use swallow-tailed bits. The sharpness of the edge will vary according to the nature of the ground; and sharp tools used in the limestone of Derbyshire would not stand two blows from the hammer in rock like that ordinarily worked in Cornwall. The borers of Cornwall and Devon are but little curved, and the transverse section shows a very obtuse angle. In the old iron tools the steel bit was welded on in different forms. It was observed in Derbyshire, and in the mining district of Mansfield, that a tool entirely of steel transmits the blow from the hammer to the cutting part better than an iron tool, and that there was considerable advantage in employing the steel tools, with the disadvantage of a greater prime cost. In some cases within the lecturer's knowledge the wages of the men had been economised 10 per cent. by giving them these cast-steel tools. The bars of the borers are usually of an octagonal rather than a round form, for the greater convenience of turning it by the hand between each blow, so as to cut fresh ground each time, just as in the case of the deep borings. The diameter of the borers in single-handed borers is from 1 to 1½ in.; of double-handed borers 1½ to 2½ in., or even larger, but then special hammers have to be employed, and perhaps three instead of two men to strike. A long series of experiments have been made to determine whether it would not be an advantage to put in a number of smaller bore-holes than those mentioned above; these small ones could, of course, be made more rapidly, but the reduction of the effect of the powder has caused them to be considered unsuccessful. Neither has the method of putting down small holes first, and then enlarging them, met with remarkable success.

## ON THE GREENSTONES OF WESTERN CORNWALL.

By JOHN ARTHUR PHILLIPS, Esq., F.G.S., F.C.S.\*

In this paper the author brought forward evidence to show that the so-called "greenstone" of Penzance really belong chiefly to the following three classes:—a. Gabbros or dolerites, in which the originally constituent minerals are either to a great extent unchanged, or sometimes almost entirely represented by pseudomorphic forms. b. Killas, ordinary clay-slates. c. Highly basic hornblende rocks, exhibiting a tendency to break into thin plates; these under the microscope present the appearance of metamorphosed slates. Slaty rocks of a character intermediate between b and c also occur. In the Cape Cornwall district the "greenstones" are chiefly hornblende slates, sometimes with veins or bands of garnet, magnetite, or axinite. The rocks near the Gurnard's Head are almost identical with those of Mount's Bay. The crystalline pyroxenic rocks and metamorphic slates of the St. Ives district exactly resemble those of Penzance. The greenstones between St. Erth and St. Stephen's are probably altered ash beds, or hardened hornblende slates; unlike the hornblende and augitic rocks of the other districts, they do not occur in the immediate vicinity of granite, but elvan courses are always found near them. The percentage of silica in the two series of rocks is nearly constant; the hornblende slates contain about 10 per cent. less silica than the crystalline pyroxenic rocks, and there is an excess of iron oxides to nearly the same extent, their composition in other respects being very similar. The killas is an acidic rock of essentially different chemical composition.

Mr. SORBY stated that he had come to nearly the same conclusions with Mr. Phillips with respect to these rocks. Dr. C. LE NEVE FOSTER agreed with the author in considering these so-called greenstones altered rocks, and not intrusive, as had been supposed. He congratulated geologists on having such a combination of chemical and microscopical analysis as that furnished by Mr. Phillips.

Mr. RUTLEY thought that many of the bands might be identical with those occurring in Devonshire, especially near Tavistock. The dipping away from the granite described by the author might be due to the granite having been subsequently intruded. He thought it probable that many of the beds referred to may be ash-beds, and that it was quite possible the schistose character might be superinduced in beds of ashes by the pressure of superincumbent rocks. The mapping of Sir Henry De la Beche must not be despised; for

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although he might be wrong in determining the nature of these rocks, he was perfectly correct in marking their distribution.

Mr. KOCH remarked that, in considering the nature and origin of such rocks as these, we ought to notice what rocks overlie them, and to take into account the probable effects of water percolating through such overlying beds, and containing much carbonic acid, by deposition of silica and removal of carbonate of lime. The analysis of the killas given by the author was almost that of altered trachyte. He thought that in such investigations the microscope must be our principal guide, but aided by the consideration of the relative positions of the rocks.

Prof. RAMSAY enquired what was the definition of a volcanic rock? He thought that volcanic rocks were either lavas or ashes, and that it was dangerous to affirm that the blue elvans were ashes in so metamorphic a district.

Prof. MASKELYNE, after thanking the author for his paper, enquired as to the meaning in which he used the terms "gabbro" and "igneous rock." He also remarked that it was strange to find apatite the only mineral that was unaltered.

Mr. DREW enquired as to the possible future colouring of the survey map of this district. It appeared from the author's paper that the parts coloured as "greenstones" in the present maps included various rocks which ought to be sub-divided.

The AUTHOR, in his reply, stated that igneous rocks have a certain amount of cleavage, which is often rendered very distinct by weathering. The crystals of hornblende are very distinct in the rocks described. Gabbro is a felspathic rock with diallage instead of augite; but with regard to some of them, it may be doubtful whether they are gabbros or dolerites.

## BRITISH IRON TRADE ASSOCIATION.

From the immense importance of the subjects brought forward for discussion at the first conference of this association there seems to be ample justification for the opinion that its operations will prove highly advantageous to the trade. The inaugural address, to which reference was made in last week's *Mining Journal*, contained information and suggestions which could not have been expected from anyone without the knowledge and long experience of Mr. Clarke. It may, perhaps, require no evidence that at the British Iron Trade Association meetings false delicacy on the part of members will not be permitted to influence them in accepting views the accuracy of which is questionable, but were such evidence sought the warmth with which the opinions expressed by the meeting on the first paper read were discussed will supply it. The paper was by Mr. B. Samuelson, M.P., and described the Board of Arbitration and Conciliation for the North of England Manufactured Iron Trade. The paper was in favour of arbitration, and detailed a few of the advantages that had resulted from it, the opinions expressed being disputed as "not proven" by Mr. Menelaus, Mr. Robertson, M.P., and a few others, who may have had ample grounds for their conclusions. The inestimable advantages of arbitration, both to masters and workmen, will assuredly lead to its ultimate adoption, but at the present moment there are many points which may render resort to arbitration impracticable.

For the principle of arbitration to be admissible it is essential that the men should be of the superior class of workers, and that the masters should possess the means to hold to an award if adverse to themselves. The men must be so far educated as to be able to appoint trustworthy and intelligent delegates to represent them, and must be straightforward enough to abide the result of an adverse award when their delegates have accepted it. The manner in which the men have accepted adverse awards and those which have given them less than they contended for has been most praiseworthy, but the fact must not be lost sight of that in the districts where this has been done the men have full confidence in their delegates, and the delegates have displayed an amount of energy and intelligence which has given them a certain control over those they represent. The South Wales experience is adverse to boards of arbitration and conciliation, probably because the men were represented by delegates who were not identified with the district, and who could, therefore, scarcely be expected to have either the confidence or the control of the men. The feeling is constantly spreading that conciliation and arbitration do no more to prevent the rise of wages than to promote their fall. It is freely admitted that both masters and men have repudiated awards which were perfectly just, but this was only in the early efforts to apply the system; at present, repudiation in districts which have had the advantages of the arbitration principle is almost unheard of, an award seldom meeting with more opposition, even when adverse to the men, than is represented by a few days "sulk" by some less tractable.

The general views of those who have had experience of the principle, fairly applied, cannot be better expressed than it was by Mr. Mundella, who has had long experience with the working of the system, and in anything but a favourable district. The men are usually acute enough to appoint the more intelligent of their fellows to represent them, and, moreover, to appoint men who will work hardest to secure the best terms for the men, so that in these delegates the most intelligent of the workmen are brought face to face with their employers, and each become acquainted with considerations which could never before have occurred to them, and then they immediately became the advocates of fair dealing; and the difficulty that the delegates ordinarily had was with the men behind them, and it was infinitely better that they should deal with those questions round the table by an equal number of employers and employed, than that the employers should refuse to have meetings with the workmen, and that the workmen should go to the publichouse and form desperate resolutions that they would strike and do this, that, and the other against their employers. For eleven years Mr. Mundella was President of the Nottingham Board of Conciliation, and believed that in the course of 16 or 17 years there had been only two or three cases where the men had been recalcitrant. What had been the effect? Why, that the intelligent men had been against the men behind them. The men in one district had said, "We won't support the men in the other;" they had gone to them and said "You are rebelling against the board, and bringing them into discredit." The next consequence was they deprived the recalcitrant men entirely of public sympathy, and that was a very great thing. Where they had appealed for a decision to men allotted by themselves—and where the referee had been appointed by themselves, and then they did not obey his award—their legs were at once taken from under them. There was no sympathy for them, and the Unions themselves would not support them. He had seen it happen again and again, perhaps at some particular works were most, or the whole of the men had been unwilling to abide by a decision against them, the result had been that men had immediately gone to those works and said—"This won't do, we will break up the board, we cannot do this." The result is that those men go to work. Speaking upon the recent arbitration in the North of England iron trade, Mr. Mundella said that, when he and Mr. Williams gave a decision of 7½ per cent. against the men, it made a reduction of 50 per cent. from the wages they were receiving in 1873, and he felt that they were putting the men to the severest possible test in doing so. Mr. Mundella was confident that some of the worst and most disastrous strikes that had ever taken place in Great Britain in the last six years would have been settled, to his certain knowledge, if the employers had had the courage to say that they would remit it to arbitration. He said so from actual knowledge, and from the fact that men had come to him almost on their knees to get him to help them to get arbitration. Strikes, which had cost as much as five and six millions might have been entirely avoided, and there would not have been a stoppage of an hour, if the employers had made that slight concession of feeling which they were called upon to make. They were all citizens of one common country, and interested in promoting the common trade of that country, and if they had strikes it was away trade, and when trade once went into a new channel it was very hard, as they all knew, to get it back. It was impossible for them as masters to say "We will deal as isolated masters with isolated men." He had found in his own district, where they had a hundred employers, that anything happening in one works might produce a catastrophe that would affect them all. Therefore, they



upon the Factory Acts in their relation to the Iron Trade being brought forward by Mr. Bleckley, opinions appeared to be as greatly divided as upon the other questions discussed, the views entertained by gentlemen from different districts being diametrically opposed to each other. Mr. Bleckley considering it a hardship that children of 12 years of age were not allowed to work in the rolling-mills; whilst Mr. Whitwell, of Darlington, said that the people in the Cleveland district would be sorry to see children brought into the rolling-mills before 13 years of age; and, in fact, they were quite willing to wait until the children reached 14 years. It is to be regretted that upon this question there should be any difference of opinion, but really there is so much to be said on both sides that it is scarcely surprising. There is no doubt that the restriction upon the employment of children presses heavily upon widows, and not unfrequently throws both the women and children upon the parish, whilst they could otherwise escape that degradation; but, on the other hand, it compels men to see to the education of their children, instead of sending them to work at a tender age, perhaps with no other object than to secure to themselves larger means to indulge

in intemperance. The fact, however, must not be lost sight of that the restriction of children's labour is calculated to give us in the rising generation a better class of workmen, and thus to promote the general welfare of the community. At the suggestion of the Chairman the matter was referred to the board, and it having been stated that measures would be taken to obtain a report upon the iron and steel exhibits at the forthcoming International Exhibition in Philadelphia, the business of the conference closed.

**SMOLDERING FIRES IN COAL MINES.**—At a meeting of the Manchester Geological Society, on Tuesday (Prof. Boyd Dawkins in the chair), a discussion arose as to the probable connection between smoldering fires in goafs in coal mines and mine explosions. Mr. Greenwell observed that about 80 per cent. of the explosions took place between the months of November and February. They knew perfectly well that in the working of coal gunpowder was used all the year round, and they also knew that the ventilation, as a rule, was more slack in the summer than in the winter, so that there was apparently a greater probability of explosions taking place in the summer than in the winter; but they found quite the reverse to be the fact. The question was, how was this to be accounted for, and whether there was not a possible connection between these explosions and the standing or smoldering fires in the goaf? Was it not possible that where the temperature of the standing fire in a goaf in the summer time, owing to the less active state of the ventilation, was such as to smoldering, could not be such that would not ignite the gas should any happen to be present; but that in the winter, when the ventilation became more active, there was a possibility of its being fanned into such a flame as would ignite the gas, and thus cause an explosion. He suggested that it would be a very useful thing if they could collect together some information, statistical or otherwise, by which they might arrive at a conclusion as to whether there might not be some connection between the explosions which took place in the standing fire in the goaf, and the explosions which took place where there was standing fire in the goaf. If the quantity of gas had been large instead of small there was no physical reason to prevent a very heavy explosion taking place instead of a series of slight ones. Such might possibly have been the case in the Oaks explosion. Mr. J. Dickinson, Inspector of Mines, said that in almost all cases the cause in large explosions had been distinctly traceable. In the Oaks explosion it was clearly owing to the presence of a large quantity of gas in the mine, and the cause was easily traced to the burning of the fire in the mine in that condition. A paper was to be read by Mr. Thompson before the society at the next meeting, which would, no doubt, contain some valuable information with regard to this question. The subject then dropped.

## ECONOMIC TREATMENT OF MINERALS—THE FRUE CONCENTRATOR.

With tin at the low price which it at present commands it is essential that it should be returned with the greatest possible economy in order to secure any profit for the shareholders, and that every particle of tin in the stone should at the same time be recovered. Now it has hitherto been found extremely difficult to obtain by the machinery in ordinary use results at all approaching those obtained in vanning a sample by hand. The loss of tin in hand vanning is, indeed, almost unappreciable, and hence it has not unfrequently been found that ore, a vanned sample from which has given a percentage which would yield a good remuneration to the shareholders, has entailed a positive loss. In the Frue concentrator the object has been to imitate hand vanning as closely as possible on the large scale, and that object has been so nearly obtained that, although hand labour is almost entirely dispensed with, the loss of tin is reduced to the minimum. Although the construction of the machine is now so simple, it appears that four years have been employed in perfecting it. The Frue concentrator is in effect an improvement upon the revolving belts of Brunton and of Hoffman, but whilst in the Brunton belt there was merely rotation, and in the Hoffman belt the motion of the particles amongst themselves was produced by a blow, the lateral shaking motion given to the Frue concentrator is made closely to resemble that given to a shovel in vanning by hand.

The experimental results are stated to have been very satisfactory, and a number of the full-sized concentrators are now in use in America, and have proved on a large scale the advantages claimed for the invention from a long series of experiments. At the Silver Islet Mine, Lake Superior, a large 50-stamp mill has been lately erected for the purpose of crushing and concentrating the poorer grades of ore, which are not rich enough to smelt. In this the Frue concentrators are the only washing machines employed, and treat the ore direct from the stamps, concentrating the mineral into a product assaying from 500 to 1000 ozs. of silver per ton, which is afterwards smelted. Repeated assays here have shown a saving of 80 per cent. of the silver in the rock, and on several occasions even 92 per cent. The mineral consists of galena, zinc-blende, iron and copper pyrites, with a little native silver and sulphide of iron. In California the machines are now being used on poor ores of mercury, concentrating the cinnabar previous to distillation.

The outer frame of the machine is substantially constructed of wood, and within it is supported a shaking frame, which carries the upper surface of the endless belt. At the ends of the shaking frame are bolted iron yokes, which clasp the shafts of the two end rollers and slide them in their bearings by the motion of the shaking frame. On the outside of the main frame are the bearings, carrying the small crank-shaft and fly-wheel. This shaft has three cranks turned on it of  $\frac{3}{4}$ -in. throw, or 1-in. stroke. Connection is made between the crank-shaft and the shaking frame by means of three short connecting rods and brasses. The endless belt is made of rubber cloth, is 4 ft. wide, and about 27 ft. long (12 ft. along the upper or working surface), and has projecting flanges of elastic rubber along its outer edges to keep the sand and water from splashing over. The progressive motion is communicated to the belt by a driving drum, which is also connected by a small rubber belt to the front end roller, thus enabling the apron to be run more loosely and with less strain than if only driven by the drum. The driving drum dips into a tank of water, through which the endless apron travels in passing around. On leaving the water tank the belt passes over the tightener and guiding roller. The shaking frame and upper portion of the belt are slightly inclined—from half to three-quarters of an inch to the foot, according to the ore operated on, and the upper surface of the belt moves *up* the incline. The finely pulverised ore, suspended in a small stream of water, falls upon the belt from the distributor, and travels slowly *down* the belt, subjected to the gentle shaking motion communicated by the crank-shaft. The shaking motion, as in vanning on a shovel, settles the heavier metallic particles, and these are carried up by the motion of the belt against the descending current of rock and water. At the head of the belt is a water distributor, which drops small streams of clear water at intervals of 1 in. or 2 in. across the width of the belt. The quantity of water is so regulated that only the clean mineral passes between the small streams, all rock and lighter matter being washed back. After passing the water distributor the clean mineral is carried over the end roller by the belt, and washed off and deposited in the water tank below. The rock and other light waste material flow down the belt, over the lower end roller, and drop into the waste or tailings launder.

The machine is more especially adapted for the treatment of material which is too fine for the jiggers. It is not necessary that the material on which the belt works should consist of the finest slimes; but, of course, as with all dressing machinery, the more uniform the size of the ore is the better the results obtained. In Cornwall, at the New Great Consols Mine, the machine has been tried on the crushed tinstone flowing direct from the stamps, and has been found to work with great success, treating the sand flowing from eight heads of the common Cornish stamps, and cleaning the tin at one operation ready for roasting, while the "tailings" showed hardly a trace of tin by careful hand vanning. In this case the rock has to be broken very fine, in order to separate the tin from the accompanying rock; and, therefore, the whole product from the stamp-heads is fit to run over the belt without further sizing. At many works in which lead, zinc, or copper ores are dressed by washing the crushing is not carried so far as in the above case; the stuff coming from the rolls or stamps is coarse. But even then quite a quantity of the rock and mineral is always reduced to a very fine state; and, in order to give good results, must be separated from the coarse, and treated by itself. At such works the Frue concentrator, working in connection with a good "jig," will be found valuable.

As regards the ores on which the machine will work, the only point of importance is that there be a fair difference between the specific gravity of the mineral to be saved and that of the waste matter with it. Iron and copper pyrites, arsenical iron pyrites

zinc-blende, galena, tinstone, cinnabar, native silver, and native copper, have been worked upon with excellent results; and, in the case of "tailings" from amalgamating mills, "floured" quicksilver. The very finest "slimes" flowing from settling tanks have been experimented on, and made to yield the impalpable mineral which they contained. Actual working experience has suggested various small improvements in the details of construction, so that, as now made, the machine is really light running and durable, easily set up, and readily regulated in all its parts. The only wear on the belt worth mentioning is that caused by the passage of the sand and water over its upper surface; and even this difficulty has been overcome, for by means of a liquid rubber paint a perfect surface can be put on the belt at a merely nominal cost, and which will stand several months of constant work.

It is found that the concentrator of the size referred to will treat from 7 to 8 tons in the 24 hours (as much as 10 tons having been sometimes got through), and one man can attend to three machines without difficulty, the only work necessary being to oil them and keep the working parts clean, regulate the water, and scrape out the concentrated mineral occasionally from the water tank; it works, moreover, with very little water, and does not involve a large first cost. It appears that already several engineers and experienced tin dressers have expressed a highly favourable opinion of the experimental machine erected at the New Great Consols Mine; and there is little doubt but that the machine will spread rapidly when once fairly introduced.

## ROCK-DRILLING BY MACHINERY.

During the recent unsettled times and competition between capital and labour more than usual attention has been directed to mechanical appliances, by means of which the saving of time and labour can be economically effected. Many interested in mining operations must have seen when travelling past hard stone quarries numbers of men engaged in lifting stout iron rods, tipped with steel, formed with a chisel shape, and then forcing these rods down into partially completed holes, re-lifting the rods and re-forcing until little by little the hard substance at the bottom of the rock is powdered away. Water being supplied to the hole the powder becomes mud, and is jerked up out of the hole at each stroke of the tool. When sufficiently deep, the hole is charged with gunpowder, dynamite, or other explosive, driven to the bottom, the mouth is rammed tight, the charge is fired, and more or less of the rock is blown away. A similar course has to be pursued in mines in shaft-sinking, and in the driving of headings or galleries. In such places as these holes have to be put in at various angles; the work of hand-drilling or "jumping" is slow and the utility of a machine to perform such operations can be well understood. Anyone who has observed a quarryman at work will have noticed four principal requisites in dealing with the tool by hand, and in making a machine to imitate the actions of a man when "jumping" a hole it is necessary to have the forward or feeding motion, the blow, the withdrawal, and the partial turning of the tool; also the power to give the blow further and further forward as the hole deepens. Some time ago we had an opportunity of witnessing a machine at work, invented by Mr. J. C. Cranston, of Newcastle, it having all the requisite motions and movements of a man when drilling, that of lifting, feeding, and turning the drill, and striking with it sharp, hard, telling blows, and the celerity and dispatch with which it perforated the large shot hole into the hard and flinty rock at various angles showed it to be a perfect marvel of engineering skill, and would ere long work a position of the highest standing amongst our mining and mechanical engineers. Notwithstanding the prejudice there generally exists on the introduction of any newly-invented machine, and the fierce opposition Mr. Cranston met with by his opponents when defending his patent rights in the Courts of Chancery, which he successfully maintained, the introduction of this celebrated rock-drill has been steadily making its way, having been put in operation at the works of the River Tyne Commissioners, Sir William Armstrong's works, the Marquis of Londonderry's harbour works, Lord Elgin's works, Lonsdale Iron Mines, Esett Iron Mines, Salter and Eskart Park Mines, Parkside Mines, Cleator Mines, West Moor Lime Works, Redderupfeel Lead Mines, Allerwash Limestone Works, and various other places, and recently having been put to work by the London Lead Mining Company at their mines at Nenthead (together with the "Cranston" air-compressing machinery being driven by a turbine from a fall of water of 42 fms.) and are also in use in India, Sweden, Prussia, Belgium, and other parts of the world. Since the introduction of this drill into Belgium an ingenious process has been patented by Mr. J. G. Cranston and by Mr. G. Winecz, of that country, for the purpose of quarrying and "ripping" out blocks of stone, in combination with a series of holes drilled with the machine, enabling the operators to get out large and valuable blocks without blasting or shattering the rock. The hard usage such machines as rock-drills are generally put to necessitates the parts to be few in number, simple, thoroughly strong and reliable, capable of being worked with a very high or low pressure of steam or air, without alteration of parts, embodying the machine in the shortest dimensions possible, without loss of power, so as to allow the holes to be drilled exactly in the same position as the miner would have drilled them by hand. Not only are these advantages to be found in the "Cranston" drill, but it has the double advantage that of the drill tool being rotated by hand, as well as an automatic turning motion, an advantage admitted by many eminent engineers (one of which, Mr. F. J. Bramwell, president of the Mining and Mechanical Engineers of London, who has carefully examined and studied the construction of the "Cranston" drill), to be of the greatest value, and found wanting in other drills. It is self-evident that any nice adjustment required to automatically rotate the drill tool must sooner or later be destroyed by the continued hammering and concussion of the piston rod. Practical experience has shown that the drill tool can be reliably and readily rotated by hand, whilst the man in charge is feeding it to its work, and he might as well be feeding and rotating the drill as looking at that which the automatic gearing is intended to accomplish. In future all the drills made under the "Cranston" patent will be constructed without the self-rotating mechanism, except when specially ordered otherwise. The efficiency and economical working of the machine are in no way affected by this alteration, for by dispensing with this part of the mechanism, which in the hands of unskilled workmen must necessarily become deranged, the Cranston rock-drill becomes much simpler and stronger in construction than any other rock-drill in existence, at the same time making a material reduction in the price of the machine. Mere statements of a machine drilling so many inches per minute are misleading, for some of the slowest working machines made will drill a hole in quicker time than when drilled by hand; but there cannot be any doubt that a great saving of time, money, and patience will be gained by the use of the "Cranston" drill, in shaft sinking, tunnelling, quarrying, and mining operations generally. It may be well to know that more of the "Cranston" rock-drilling and air-compressing machinery is now being erected at the Ouston Colliery, Mr. W. J. Smith's works, Trimdon Grange, the Raisbyhill Limestone Quarry Company's Works, the Roddempell Company's Lead Mines, and elsewhere.

**CORNISH PUMPING ENGINES.**—The number of pumping-engines, reported for January is 17. They have consumed 2260 tons of coal, and lifted 17,500,000 tons of water 10 fms. high. The average duty of the whole is, therefore, 52,000,000 lbs., lifted 1 ft. high, by the consumption of 112 lbs. of coal. The following engines have exceeded the average duty:—

|   |          |      |
|---|----------|------|
| Crenver and Wheel Abraham—Sturt's 90 in. ....   | Millions | 63 5 |
| Ditto       ditto       —Pelly's 80 in. ....    |          | 53-7 |
| Ditto       ditto       —Willyams's 70 in. .... |          | 77-7 |
| Dolcoath—85 in. ....                            |          | 58-0 |
| West Basset—Thomas's 60 in. ....                |          | 54-3 |
| West Wheel Seton—Harvey's 85 in. ....           |          | 61-4 |

**RAISING LIQUIDS.**—Some improvements in apparatus and appliances for raising liquids and fluids, the same being applicable as auxiliary motive mechanism for various purposes have been invented by Mr. J. C. Forstner, of Horbury, near Wakefield. The invention relates to a pump or machine to be secured (though not necessarily) in sections to a lift pump or machine to be secured (though not necessarily) in sections to a spear (or equivalent), as an air-tight tube (of cylindrical or other form), made of copper, or any other material, or the mechanical equivalent of the same, to be fastened to the spear, or equivalent, and work



with the spear, or equivalent, which is attached to the bucket of the pump, or to any appliance that is used in lieu thereof, so that the hollow cylinder or air vessel or appliance will displace one-half of the water or fluid, or other determined portion, and create an auxiliary power to assist the action of the pump or mechanism.

#### MINING AND STOCK EXCHANGE NEWS OF THE WEEK.

Messrs. F. W. MANSELL and Co. (Sworn Stock and Share Brokers), Pinner's Hall, Old Broad-street, write to us as follows:—

**WEST PATELEY BRIDGE LEAD MINES.**—As investments the many solid advantages of well selected, honestly conducted, lead mines have been again and again pointed out by us during the many years we have corresponded in your columns. As compared with veins producing tin or copper, lead ore veins are more uniform in productiveness, more permanent in character, the ore more economically rendered marketable, and its commercial value more remunerative, and always less liable to fluctuations. It is only when lead mines hitherto worked privately pass into the hands of public companies that we have any means to form an opinion of their intrinsic value as profitable investments; but it may be mentioned that while the paid-up capital of our principal lead mines amounts to about 250,000*l.*, the dividends already paid by them represent more than 2,200,000*l.*, and the aggregate market value of the shares is nearly 2,000,000*l.*, an increase having taken place since the commencement of the year to the extent of something like 500,000*l.*. A recent writer upon the subject says that the price of lead for some years past has been very good; that it remains firm with an upward tendency, and likely to continue so, in a great measure owing to the additional impetus given to the demand through the large extension of building operations caused by the great public improvements in the metropolis and the large provincial towns, which will be considerably intensified by the effect of the new Artizans' Dwellings Bill. In determining the value of a mine investment the next principal feature to the value of its produce is the possibilities and conditions in which the ore bodies are found. West Pateley Bridge Lead Mines in this most important respect are unique in point of strata, number and value of veins, and facilities for expeditious and economical development. The formation is the carboniferous or mountain limestone, one of the most distinct and unmistakable in the whole crust of the earth. Whether consisting of one-third bed of limestone, or of many beds with alternating shales and gritty sandstone, its peculiar corals and shells distinguish it at once from all series of strata; in fact, it forms in the rocky crust a zone so marked and peculiar that it becomes a guiding-post, not only to the miner in the carboniferous system, but to the geologist in his searches among other strata. With this formation, wherein such enormous wealth has been found in the whole of the surrounding mines, the value of the 12 well-defined lodes and several cross lodes traversing the whole length and breadth of the property, one cannot be regarded as unduly sanguine in expecting from West Pateley Bridge Lead Mines a success equal to the Grassington Mines, which have been very rich for nearly one century, returning to the Duke of Devonshire profits of from 60,000*l.* to 80,000*l.* per annum. At West Pateley Bridge no systematic operations have been carried on since 1811. Up to that time the mines had been highly profitable to the depth below which it was impossible to explore owing to the influx of water. Mr. John Yorke, of Beverley Hall, the lord of the mines, engaged Mr. Thomas Fenwick (an eminent mining expert of the day), to inspect the property, with a view to enable Mr. Yorke to determine as to the most advisable course to be adopted. Under these circumstances the greater value attaches to the report. It should be mentioned at that time (1811) the mine was known by the name of one of its most productive veins—North Rake:—

REPORT BY MR. THOMAS FENWICK, ENGINEER, TO JOHN YORKE, ESQ., DATED JAN. 14, 1811.

**NORTH RAKE MINE.**—The North Rake Mine was drained and wrought through the aid of a steam engine, which has been stopped near 15 years ago, and the water has been suffered to fill the workings or excavations, therefore no metal can be got at the eastern part of the mine at present but what is near the surface, and situated above the level of the water. It appears that the engine was not stopped for want of metal, as it was reported by Mr. Woods and others that there was as good a groove left in the soles as ever, but was discontinued through the great annual expense thereof (coal had to be carted 18 miles, pig lead 11*l.* per ton, and royalty one-sixth); but this Craven Cross vein (see "History of Nidderdale") can be unwatered by the continuance of Sir T. White's adit level before mentioned, at a depth of over 25 fms., or 50 yards under the level of the former workings made by Mr. Wood, the then lessee, at no great expense. As the level is standing about 20 fms. eastward of the old gin (whim) shaft in Craven Moor, and I may require only to be driven about 35 fms. from thence until it cuts the said vein, it renders this vein an object worthy of the notice of mining adventurers. Also from Mr. Dyson's account and her little vein was cut to the north of the Craven Cross veins by Mr. Wood, but very little worked, as the engine failed. To comply with Mr. Yorke's request, which was to know "the worth of this mine and its likelihood to yield future profits," I must observe that by the continuance of Sir T. White's level the prospect for future profits are flattering, and, consequently, the mine is rendered valuable. If Craven Moor cross veins are let at all I advise them to be let speedily while the advantage of the deep level can be enjoyed. Additional testimony upon the value of the property is given by no less an authority than Mr. Yorke's present mineral agent and surveyor (Mr. Frank Phillips), who has well known the mines for more than eight years. This responsible authority has from his first knowledge of them viewed the mines as of great value, and to use his own words "Looking at all their surroundings—namely, Pateley Bridge Mines on the east, Craven Moor on the east and west, Old Burrell on the south, the Grassington celebrated Duke of Devonshire's mines and the Yorkshire on the west, the Merryfield, the Stoney Groves, and the Old Nidderdale Mines to the north, all of which have yielded large profits—I do not (Mr. Frank Phillips says) look at the West Pateley Bridge Lead Mines as one of speculation, but rather as one of certain success when fairly opened up." Mr. Phillips adds that "no pumping machinery will be required for many years to come, and you have only to cross-cut the veins yet unopened to have 56 fathoms of backs on the various veins, high and dry, from which to stope." It is well known that within the past few years one small trial, known as Langthorn's, made by some speculative miners, yielded lead to the value of between 3000*l.* and 4000*l.*; after this other parties worked there, as deep as they could for water, raising about 800 bings. The difficulty with regard to water, which has hitherto prevented a continuance of the successful development of these mines, has been permanently removed by the main joint level, towards the cost of driving which the owner of the property was strongly recommended by Mr. Fenwick more than half-a-century since to subscribe 500*l.* per annum. The Sun, Clearer, and Rake veins, which have in Pateley Bridge yielded mineral to the value of about 1,000,000*l.*, are as yet untouched in West Pateley Bridge, because, for the reasons given above, the known resources and profit-giving capacity of the mines have hitherto remained undeveloped. When the mines were last worked and large profits realised, the royalty was 1-6th, it is now only 1-14th, coals had to be carted from a long distance at a considerable cost, whereas coal is no longer required, pumping machinery being unnecessary, and lead then sold for 10*l.* or 12*l.* per ton, whereas it now realises about 22*l.*. The distance from the smelting works is about three miles; the lead ore averages about 75 per cent. in pig-lead, including fuel, labour, &c., the cost of smelting does not exceed 22*s.* per ton. During the week a considerable amount of business has taken place in the shares at hardening quotations.

**HYDRAULIC GOLD MINING.**—Matters more immediately pressing have lately prevented this important branch of mining receiving the attention at our hands its increasing importance unquestionably merits. The conditions under which auriferous gravel are found have been fully explained, and in our last reference we attempted to describe the leading features to be observed in the opening of hydraulic gold mines, stating that the great gravel deposits fit for this purpose rest in channels or basins of unknown depths, and that unless the depth of the channel can be ascertained beforehand certain risks have to be taken in boring the tunnels indispensable for almost all hydraulic operations. Already the necessity has been pointed out of locating the tunnel low enough to work the whole body of mining ground. The size must depend to some extent upon the required work, the quantity of water at command, and the length of the season annually during which the water lasts. Tunnels 5 ft. wide and 6 ft. high were considered in former years sufficiently large for any purpose, but since hydraulic mining has been conducted on a much larger scale the size of tunnels, in height and

width, has increased accordingly. They are now generally constructed 7 ft. wide and 8 ft. high for single runs of flumes or sluice-boxes, and in those mines where there is a sufficient quantity of water for eight or nine months in the year, and where the remaining three or four months can be used for a thorough cleaning up, repairing, &c. A tunnel of such a size, with a 6 ft. flume and 4 ft. grade per 100, would admit the use of 2000 or 2500 in. of water; the size of tunnel may be reduced if the supply of water is much less, other conditions being the same. For mines which possess a lasting supply (say, 2500 to 3000 in. the whole year round) a much larger size would be desirable, admitting a double run of sluice-boxes, and thus an uninterrupted washing.

**BLUE TENT HYDRAULIC CONSOLIDATED (Gold).**—In all gravel washings there are three conditions indispensable to highly remunerative results—auriferous alluvium, capacious outlets, and abundant and cheap water. In the 400 acres of gravel, 230 ft. deep, comprising the Blue Tent Consolidated, in which there are 145,200,000 cubic yards, including all the richer under strata, the questions of quantity and value are sufficiently established, especially when it is remembered that by a very imperfect washing on some of the claims gold has been returned to the value of £780,000, showing that from the ground worked off, much the larger portion of which has been surface, something over 15 cents has been realised gross per cubic yard; the gold is of the highest grade, coining over \$19 per ounce. The expense usually attending hydraulic operations is from one-fourth to one-third of the gross returns. Suppose three monitors, under a pressure of 300 ft., to discharge each 1000 in. of water, and to wash jointly 9000 cubic yards per day of 24 hours, and to operate continuously, over 53 years would be required to exhaust the Blue Tent Consolidated Mines, whereas if the additional depth of the placer was estimated at 10 cents per cubic yard the amount returnable would be over \$33,000,000, and 94 years or more would be required for the displacement.

**CONDES COMPANY OF CHILI (Silver).**—We mentioned last week that the Isolina Mine, without the other properties belonging to the company, is capable of yielding 300 tons monthly from the ends alone, and that there is in sight 5000 tons of ore, which can be extracted at any time. It may now be added that the stopes are untouched, and the ends of the levels in rich ore. The other six mines have each a shaft of 10 yards in depth, as required by the mining laws; each mine is 800 yards long. There is no water in the mines, nor probability of meeting with any, due no doubt to the steepness of the hill. These six mines have not been in active working, because the Isolina alone has always produced more ore than the furnaces could smelt, but from the ore in some of them and on the outcrops they are equally worthy of being worked separately, were it not that the adit enables this to be done with greater facility in depth. At a distance of 5 miles from here there is a stream, at which the ores can be concentrated with the greatest facility, and raised 50 per cent. in value. The rock in which the lodes runs is diorite, and their matrix quartz, lime-spar, and baryta. The adit is being driven at 6*l.* per fathom in the country, but the lodes, and particularly the Isolina, where very little powder is used, are easy to work. Besides the adit already mentioned, another one can be driven from the foot of the hill to cut the Isolina vein at a depth of 300 yards, and the other lodes, which are higher up the hill, at a still greater depth, so that in future the ores can be thrown down and tramways made to carry them out by that adit, as well as the one now working, which is being driven at right angles to cut the lodes, which run about north-east and south-west. The facilities for working these lodes are unequalled, from their being parallel lodes at distances of 30 to 40 yards from each other. The advantage of extraction of ores by adits, the absence of water in them, the small quantity of powder used, the facility of concentrating at a short distance from the mines, the proximity of the mines to the capital for obtaining supplies and materials, men and freight by rail, and the percentage of silver contained in the ores, are features placing the Condes Mines among the most valuable. The calculations are that the profits will be at the rate of 10*l.* per ton.

**RICHMOND CONSOLIDATED (Silver).**—The cabled return this week is \$46,000. No mention is made as to the quantity of ore smelted to obtain this output; our information is that not much less than 1000 tons has to be treated. For some reason every nerve is now being strained. By-the-way, did not the directors receive information on Tuesday (per cable) that the furnace engine was all but broken down—if so, why has the fact not been published? Unless the debentures are subscribed for, who is to meet the expenses during the time the furnaces shall be "shut down," which must soon take place? Professor Price has re-valued the reserves of ore. What is the result?

**I. X. L. (Gold and Silver).**—These mines, as mentioned last week, are on the same belt and in the same porphyritic formation as the Comstock. We have lately had an opportunity to examine some of the ores, which are in every respect identical with those from the Comstock. One specimen taken from the upper tunnel is nearly pure ruby silver, which would give an assay value of probably 3000*l.* per ton. Messrs. Johnson and Mathey (of the Bank of England) have assayed some of the outcrop ores, yielding 0-300 oz. of gold and 121-200 oz. silver per ton, value 34*l.*; the average of the tunnel ores gives 1-300 oz. gold, and 181 oz. silver per ton, value 51*l.*. It is proposed, in the first instance, to erect a mill capable to treat 20 tons per day, and a mill of this capacity is on offer at a very moderate price. Sufficient ore has been opened in the upper levels to regularly maintain this return, keeping the mill fully employed. Mr. Chalmers, in his report, says:—"At the risk of being branded as a false prophet (in this case infinitesimal) I venture to predict you can build your drill out of the ore, and within six months of its erection pay dividends; further to prove my sincerity and indelible character of that opinion, I am willing to superintend the work until the mine pays dividends for my bare expenses—say, \$50, or 10*l.* per month." Of the average quality ore 20 tons per day, at 50*l.* per ton, is equal to 1000*l.*, from which must be deducted 5*l.* per ton for expenses.

**STOCK EXCHANGE GENERAL MARKETS.**—The Money Market displays increased firmness, owing solely to the small resources of the open market; the supply of bills for discount is far from large, but the rates tend upwards. The predominating tendency in the stock markets has been adverse, but the amount of business done below the average. Home Government Securities offered for cash, probably the result of the necessities of the money market. Indian Sterling Stock keeps firm, thus forming a striking contrast to the Enforced Paper. The Bank of Bengal has advanced its rate of discount 2 per cent., now charging 8½ per cent. for bills of one month, and 9½ per cent. for bills of longer date. This is the first serious effort to grapple with the grave consequences resulting from the unexampled decline in the Indian Exchange. Obviously this was the first step to be taken; the question now is, what next can be done?

**RAILWAYS.**—Last week we gave a statement of the new capital required to carry out the schemes submitted to Parliament this session by existing railway companies—the total amounted to nearly 22,000,000*l.*. A more immediately interesting question is the extent of fresh outlay to which the leading companies already stand committed. Taking thirteen of the leading English lines whose reports have been issued we find that in the half-year ending with June next it is intended to expend upwards of 7,000,000*l.*, and in subsequent half-years upwards of 17,000,000*l.*. The London, Chatham, and Dover, while proposing to lay out 407,400*l.*, has not yet determined in what period the works contemplated shall be attempted. The London and North-Western takes the lead in the additional expenditure of capital, contemplating an outlay of nearly 7,000,000*l.*. The Great Northern, the Lancashire and Yorkshire, the Manchester and Sheffield, the Midland, and the North-Eastern come next, with nearly 2,000,000*l.* to upwards of 3,000,000*l.*. The Great Eastern, Brighton, South-Western, Metropolitan, Metropolitan District, and South-Eastern have but trifling works in hand. The Northern lines are the great spenders, and a large increase of traffic becomes absolutely necessary to maintain even present rate of dividends. Manchester, Sheffield, and Lincolnshire stocks have been pressed for sale

upon the large issue of new capital; the Deferred stock gets no dividend as it is, and the Preferred not much; the new issue of Preference stock requires 75,000*l.* a-year additional net revenue to maintain the present position—this means 150,000*l.* a-year of gross revenue, or about 3000*l.* a week. North British has been quoted as low as 108½, and as high as 116. The general weekly traffics were in most cases unsatisfactory.

**FOREIGN BONDS.**—Some of the non-speculative have improved including Portuguese, Hungarian, Japanese, and French, but doubtful descriptions are flat. Egyptian have been sold upon rumours regarding Mr. Cave's report, but it is not likely they have any authentic origin; the Khedive's invitation to three of the European powers to send delegates to preside over the proposed National Bank is an attempt to get the project countenanced in the highest quarters, but it is not likely to be successful without the imposition of such restrictions as the Viceroy will be unwilling to submit to. Turks have been depressed on a note from the agents of the 1838 loan, stating that the half-payment could not be paid, as sufficient funds had not been placed at their service; the amount required is 120,718*l.*, and the amount in hand is 46,385*l.*. Peruvians have declined in sympathy with the general course of the market for securities of this kind.

**MISCELLANEOUS.**—An investing demand for Indian Guaranteed Stocks has been the chief favourable feature for the week. Lombard shares offered, in the fear that the agreement for the separation of the Austrian and Italian portion of the system has been modified to the prejudice of the shareholders. Canadian lines flat upon a poor traffic statement by the Great Western Company. Colonial and American railways without particular movement, but the tone steady. Anglo-Egyptian, Agra, and Oriental Bank shares depressed, the first by the doubts entertained as to the consequences of the company developing into a national institution, and the others by the depression of Eastern business affairs.

#### Meetings of Public Companies.

##### WEST ESKAIR LLE MINING COMPANY.

A special general meeting of shareholders was held yesterday at the offices of the company, Austinfrs., for the purpose of passing a resolution to the effect that the capital of the company be further increased to 30,000*l.* by the issue of 3000 shares of 2*l.* each, upon such terms and conditions as regards priority, both of capital and dividend, as the meeting might determine.

Mr. E. APPS SMITH in the chair.

Mr. LIVINGTON (the secretary) read the motion calling the meeting.

The CHAIRMAN said he had very few remarks to make, because nearly all the gentlemen in the room were also present at the private meeting held the other day. The simple fact was that the company had not sufficient funds to go on and properly develop the company in the way it should be done, and as the majority of the shareholders had not subscribed to the debentures which it was intended to issue, the directors had considered other means of raising the money, and had decided that the only way to do it was by preference shares, and at the private meeting to which he had referred that course was agreed to. The present meeting was called for the purpose of passing the resolution in a formal shape, and the directors would then set about getting the money in as quickly as possible. Of course, if the money was not raised the company must go into liquidation. Without funds the directors could not go on. The board had done all they could to carry on the company; but, as he had said, their hands had been tied for want of funds. He fully believed that if the mine could be properly developed it had a good future before it. If the resolution to be proposed later on were passed a circular would be sent to each shareholder, and the feeling of the whole body would then be ascertained. He was sorry there were so few shareholders present, but this lack of interest in the mine on the part of the shareholders was really one of the difficulties with which the board had to contend. Out of 230 shareholders, only about 20 or 22 had taken debentures.

Capt. DAVIS, in answer to questions by Col. Bogle, said that certain works which he had recommended when he took charge had been and were being carried out, and they had now got the blende from a percentage of 40 per cent. up to 56 per cent.; and by-and-by, by some little alteration which was being made, they would be able to get it up to 80—in fact, he believed they had got it up to that now.

The CHAIRMAN: You are doing that at a decreased cost?—Capt. DAVIS said it was done at a less cost. It was the intention to extend the cross cut.

Col. Bogle said there was no doubt it was an extraordinary fact that whereas they scratched the surface ore was met with.

Mr. LIVINGTON said that was the case, but at present they were not deep enough to get good returns.

The CHAIRMAN said that the main prize was the Eastern Mine, which they had not been able to touch yet. The agent had every confidence in the future of the mine if he had the money to go on with.

Capt. DAVIS said there could be no doubt whatever about the value of the mine, especially the eastern mine. In the eastern level a great deal of work had been done, and there was very good machinery in the eastern mine. The work in the eastern mine was done by this company, but in the western mine a great deal of work was found done. When copper and lead came together it was always a good sign of good lead ore coming on. The copper gave out, but the lead kept in. They were in a better position to work the eastern mine than the western.

Mr. LIVINGTON said the men were willing to take tribute work, which showed that they had a good opinion of the mine.

The CHAIRMAN then formally moved that the capital be increased by the issue of 3000 preference shares, of 2*l.* each, bearing 20 per cent. interest.

Mr. WEBB seconded the resolution, which was put and carried.

The meeting then broke up.

##### PARYS MOUNTAIN MINES COMPANY.

The tenth ordinary general meeting of shareholders was held yesterday at the offices, St. Helen's-place,

Mr. J. Y. WATSON, F.G.S., in the chair.

The notice calling the meeting was read by Mr. F. R. WILSON, the secretary.

The statement of accounts showed that during the six months ending in December last copper ores to the value of 2981*l.* 6*s.* 1*d.* were sold, and the reserves in the mine had not been diminished. The total returns for six months showed 3834*l.* 15*s.* 6*d.*, against a cost of 3767*l.* 2*s.* 5*d.*, or a profit of 67*l.* 13*s.* 1*d.*. The assets over liabilities are valued at 3236*l.* 12*s.* 7*d.*. The various points in operation in the copper lodes are valued in the aggregate at 35½ tons of copper ore and 14 tons of sulphur per fathom. The precipitate pits are yielding well, and the ochre pits will shortly be cleared out. The 90 cross cut south, towards the great open cast, has not yet reached the Mona lode, but the agent has every reason to expect that it is still before him, and may shortly be reached.

The CHAIRMAN stated that since the report was issued a letter, dated March 2, had been received from the mine, giving a favourable account of the progress of the works. He did not know that he had anything to add to the information contained in the report which had been sent to the shareholders, but he should be glad to hear any remarks, or answer any questions. He moved the adoption of the report and accounts.

Mr. F. R. WILSON said the only feature to be noticed was that in the cross-cut south there was a soft joint which they were passing through, and had been passing through for two or three days. Any change of ground there was a hopeful sign, as the agent was still of opinion that the Mona lode was before them; up to the present time they had passed nothing in the shape of a lode, but had only passed through sulphur coated with copper. The agent was, therefore, of opinion that the lode was still before them. A great lode like that could not have disappeared, and, therefore, any change in the ground at the end of the cross cut was hopeful.

A SHAREHOLDER, remarking upon the small attendance, said he supposed most of the shareholders lived in the country.

Mr. WILSON: Certainly; they are scattered over England, Ireland, and Wales.

The CHAIRMAN said there were between 300 and 400 shareholders altogether.

A SHAREHOLDER asked what reason there was for supposing that there was a large lode somewhere before them?—Mr. W. MITCHELL said the Mona lode was supposed to be between the cross cut and the great open cast. No doubt there had been a dislocation, which might have somewhat diverted the course of the lode; and, therefore, it was uncertain where they would hit it. It was thought they would have hit it before now.

Mr. WILSON said that the lode in the adjoining sett (the Mona) had been worked profitably for years.

The CHAIRMAN said there was no doubt the lode must come somewhere between the 90 cross cut and the great open cast, and the agent was of opinion that they were close upon it. They knew the lode was before them, and that they must hit it before they came to the great open cast. There were still about 200 yards to drive before they reached the great open cast.

A SHAREHOLDER: How many yards do you drive a day?—Mr. MITCHELL said they could not estimate it by the day, but they drove about 4 or 5 yards a month. There were two or three lodes besides the Mona between the cross cut



and the open-cast, which would be cut by continuing to drive. They might be cut large or small, but they must be.

Mr. BRADY said the lode in the adjoining Mona Mine was a splendid lode. The Monks of Anglesey, and other owners, were so desirous of royalties that they would not let one company work it, but divided it between this company and the Mona. Of course the lode might be cut any day, but the object was to get under the open-cast. Why so much importance was attached to the Mona lode was the great open-cast. Why so much importance was attached to the Mona lode was the great open-cast.

A SHAREHOLDER asked what was meant by the expression "great open-cast?" Mr. BRADY explained that it was an enormous chasm or aperture which had been scooped out by the old miners about a century ago, who got all the ore they could get out easily, but when interrupted by the water abandoned the mine. There was no doubt that enormous quantities of copper had formerly been obtained from the mine.

Mr. MITCHELL, in answer to a question, said they could not use iron pumps in the mine, because an acid which was contained in the copper ate away the iron in a few days.

A SHAREHOLDER asked whether it would not have been better to drive down the open-cast, instead of driving so as to go beneath the property?—The Chairman said it would not; the best and cheapest way was to pursue the plan which the directors had adopted, and drive underneath the great open-cast. He pointed out that, notwithstanding the expenditure on exploratory works, the property was being worked at a small outlay, so that any change for the better would be a great improvement.

Mr. MITCHELL pointed out that labour was now very reasonable, coal was cheaper, and old iron, which was used in the manufacture of copper precipitate, was also at a moderate price, and any improvement in the price of copper would, of course, tend to materially benefit the company.

Mr. BRADY said that if the price of copper was now as it was a few years ago, the company would be paying a large dividend. The price of copper was not about the company would be paying a large dividend. The price of copper was not about the company would be paying a large dividend.

A SHAREHOLDER: Do you think, on the whole, the affair looks hopeful and prosperous?—The Chairman said he certainly did.

The resolution for the adoption of the report and accounts was then seconded by Mr. COOPER, and carried.

A vote of thanks to the Chairman and directors closed the proceedings.

[For remainder of Meetings see to-day's Supplement.]

## THE COPPER TRADE.

| Stocks in Europe:—   | Tons.          |
|--|----------------|
| Chili ore and regulus, Liverpool & Swansea (equal to fine).    | 1,723          |
| Chili ore in Liverpool   | 8,367          |
| Chili ore in Swansea   | 1,363          |
| Chili ingots in Liverpool                                      | 503            |
| Chili ingots in Swansea  | 5,325          |
| Foreign copper (chiefly Australian) in London                  | 2,324          |
| English copper in London                                       | 50             |
| Chili bars and Barilla in Havre                                | 2,073          |
| Other copper in Havre  | 250 = 21,968   |
| Afloat and chartered from Chili to Europe (advised by mail):—  |                |
| Ores and regulus (equal to fine)                               | 3,243          |
| Bars and ingots  | 5,751 = 30,942 |
| Afloat from Australia (advised by mail):—                      |                |
| Fine copper  | 1,826          |
| Afloat and chartered from Chili to Europe (advised by cable):— |                |
| Fine copper  | 4,000          |

Total ..... Tons 36,568  
London, March 1. HENRY R. MERTON AND CO.

Business transacted since the 15th inst. comprises about 1000 tons bars on the spot at 70l. down to 77l. per unit. Bars for arrival with extra prompt 800 tons at 80l. to 78l. per unit. Chili ore and regulus is held for prices that smelters are unwilling to pay, and consequently there is no business to report in this material. French buyers have taken about 2300 tons Lake Superior copper for monthly deliveries at Havre, 2068 tons fine, 1874; 24,000 tons fine Feb. 23, 1875. Stock of Chili copper in Havre, 2068 tons fine, 1874; 24,000 tons fine Feb. 23, 1875. Stock of Chili copper in Havre, 2068 tons fine, 1874; 24,000 tons fine Feb. 23, 1875. Stock of Chili copper in Havre, 2068 tons fine, 1874; 24,000 tons fine Feb. 23, 1875.

Valparaiso, 412 tons bars and 100 tons ingots. At Swansea: San Jose, from Lota, 615 tons bars. Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at—

| Ores.   | Regulus. | Bars. | Ingots. | Barilla. |
|---|----------|-------|---------|----------|
| Liverpool   | —        | —     | 8367    | 503      |
| Swansea   | —        | —     | 1353    | —        |
| Total   | 3829     | 9720  | 503     | —        |
| Representing about 11,946 tons fine copper, against 11,778 tons Feb. 15; 12,838 tons Feb. 23, 1875; 21,200 tons Feb. 23, 1874; 24,000 tons Feb. 23, 1875. Stock of Chili copper in Havre, 2068 tons fine, 1874; 24,000 tons fine Feb. 23, 1875. Stock of Chili copper in Havre, 2068 tons fine, 1874; 24,000 tons fine Feb. 23, 1875. |          |       |         |          |

The principal feature in this market was the announcement that the consignee of Wallaroo copper will in future dispose of his holdings by public auction: 2000 tons cakes and ingots will be offered for sale on the 28th inst. The charters from the West Coast were called for the second half of January 2100 tons, 75l. 10s. to 76l.; Wallaroo, 60l. nominal. The English smelters have reduced their rates, sheets 4 by 4 may be bought at 88l. Second hand ore is of tough and best selected have only found buyers at considerable reduction on smelters' quotations. The imports and exports for January were, by the returns of the Board of Trade:—

| Imports.                                       | 1875. | 1875. | 1874. |
|--|-------|-------|-------|
| Ore  | 1875  | 2536  | 2058  |
| Regulus  | 3515  | 4754  | 2823  |
| Copper   | 2121  | 4068  | 3085  |
| Exports.                                       |       |       |       |
| Foreign raw                                    | 1515  | 1208  | 1111  |
| English raw                                    | 733   | 973   | 716   |
| Manufactured, including yellow metal and brass | 1773  | 1791  | 1615  |

The quotations for ore and regulus are nominal; importers ask 16s. 6d. and 17s. respectively; whilst smelters hardly seem inclined to purchase, even at a reduction therefrom of 1s. 6d. per unit. Bars are recorded about 50s. per ton since Friday last; and though the quantity offering for sale has been limited, each attempt of holders to realise has caused an immediate fall in values, without creating any desire on the part of consumers to purchase beyond their actual requirements. Australian is rather staidier, sellers being scarce, and the chief importer out of the market: the drop herein is about 1l. 10s. to 2l. per ton. We note small sales of Wallaroo, from second hands, at 87l. 10s. down to 86l.; but at the same price as they paid for the cash lots. English has sympathised with other sorts, and makers report a great difficulty in finding an outlet for their goods, even at present low prices. Rumours are current of sales of about 3600 tons Lake Superior ingot, for shipment from New York to the Continent during the current year; but no exact information hereon has yet transpired.

The following tables show the statistical position:—Jan. 1 to Jan. 31.

| Imports.                        | 1875. | 1875. | 1874. |
|---------------------------------|-------|-------|-------|
| Copper in ore                   | 1875  | 380   | 143   |
| Ditto in regulus                | 1757  | 2377  | 1411  |
| Ditto in bars, cake, and ingots | 2,121 | 4,068 | 3,085 |
| Total                           | 4,950 | 6,825 | 4,939 |
| Exports.                        |       |       |       |
| Foreign copper                  | 1,515 | 1,208 | 1,111 |
| Raw English copper              | 734   | 973   | 716   |
| Manufactured copper             | 754   | 1,015 | 839   |
| Yellow metal                    | 989   | 775   | 752   |
| Brass                           | 341   | 278   | 418   |

The following were the deliveries from stock in England and France (reduced to pure copper), also Chili chartered and afloat for same:—

| Stocks in England and France (reduced to pure copper), also Chili chartered and afloat for same:— | 1875. | 1875. | 1874. |
|---|-------|-------|-------|
| Liverpool (Chili—in ore, regulus, Jan. 1. Feb. 1. Mar. 1. Mar. 1.)                                | 1875  | 1875  | 1874  |
| Swansea (Chili—in ore, regulus, Jan. 1. Feb. 1. Mar. 1. Mar. 1.)                                  | 1875  | 1875  | 1874  |
| London (Chili—in ore, regulus, Jan. 1. Feb. 1. Mar. 1. Mar. 1.)                                   | 1875  | 1875  | 1874  |
| Havre (Chili—in ore, regulus, Jan. 1. Feb. 1. Mar. 1. Mar. 1.)                                    | 1875  | 1875  | 1874  |

increase in the imports from Australia—the increase also of copper in the form of precipitate, and the new annual supplies of American copper to the Continent—that our requirements are being more amply provided for, and that we must not look to see even 80s. as the ruling price again. The shipments from the West Coast for 1875 were 43,700 tons, against 48,577 tons in 1874, and to Jan. 10, 1876, 1476 tons, against 2383 in the first fortnight of 1875. The charters to Feb. 17 this year are 5500 tons, against the corresponding period of last year 6100 tons.

The imports of copper into England for the first month of the following years were—1872, 8365 tons; 1873, 4720 tons; 1874, 5885 tons; 1875, 7955 tons; 1876, 6365 tons. The exports for the same periods were—1872, 3071 tons; 1873, 4076 tons; 1874, 3443 tons; 1875, 3876 tons; 1876, 3882 tons. The position from March 1, 1875, to March 1, 1876, was as follows:—

| Price.         | Stock on hand. | and chartered. |
|----------------|----------------|----------------|
| 1875—March 1   | £32 0 0        | Tons 20,990    |
| April 1        | 80 0 0         | 23,365         |
| May 1          | 83 0 0         | 23,514         |
| June 1         | 83 0 0         | 23,530         |
| July 1         | 82 0 0         | 23,754         |
| August 1       | 79 0 0         | 22,585         |
| September 1    | 83 0 0         | 23,022         |
| October 1      | 82 0 0         | 22,358         |
| November 1     | 82 10 0        | 23,549         |
| December 1     | 81 0 0         | 20,885         |
| 1876—January 1 | 81 10 0        | 20,583         |
| February 1     | 81 0 0         | 20,302         |
| March 1        | 76 0 0         | 21,993         |

And the comparative positions at the same date of the past four years with the present are as follow:—

| Price.       | Stock on hand. | and chartered. |
|--------------|----------------|----------------|
| 1872—March 1 | £28 0 0        | Tons 20,047    |
| 1873—March 1 | 85 0 0         | 32,180         |
| 1874—March 1 | 78 0 0         | 29,643         |
| 1875—March 1 | 82 0 0         | 20,990         |
| 1876—March 1 | 76 0 0         | 21,993         |

London, March 1. HENRY ROGERS, SONS, AND CO.

## THE TIN TRADE.

| Jan. 31.                            | Feb. 29.    | Feb. 28. | Feb. 28. |
|-------------------------------------|-------------|----------|----------|
| 1875.                               | 1876.       | 1875.    | 1874.    |
| Straits and Australian, spot.       | 5,686       | 5,777    | 4,489    |
| Ditto, landing                      | 352         | 1,130    | 2,137    |
| Straits afloat                      | 922         | 1,310    | 1,118    |
| Australian afloat                   | 2,403       | 1,787    | 2,000    |
| Banco, on warrants                  | 1,113       | 810      | 725      |
| Ditto, Trading Co.'s hands          | 1,658       | 1,874    | 3,555    |
| Ditto, 30 days                      | 254         | 244      | 1,095    |
| Billion, spot                       | 575         | 1,088    | 1,005    |
| Ditto, afloat                       | 1,000       | 1,000    | 480      |
| Total                               | Tons 14,440 | 15,020   | 13,242   |
| Deliveries during the month in      |             |          |          |
| London                              | 1,121       | 1,380    | 1,166    |
| Ditto, Holland                      | 510         | 639      | 420      |
| Total                               | Tons 1,431  | 1,969    | 1,586    |
| Prices of Straits.                  | £40         | £74 10s. | £20      |
| Shipments from Straits, in February | Tons 800    |          |          |
| Ditto, Australia, ditto             | 870         |          |          |

During 12 months ending Feb. 29, 1876, months, 1875, 1876, 1875, 1874.

The tin market has been weak and irregular this month, prices experiencing a further decline. The market was taken at the last Banca sale by the Trading Company, which was followed by the rest of the market, and the ease of the tin market has been very short duration only. Most consumers have abandoned Banca altogether at its present extravagant price, this month's deliveries chiefly proceeding from contracts made before the January sale. This is all the more to be regretted as Banca used to fetch a higher price than other descriptions, which difference, we have no doubt, will henceforth disappear. Transactions in Banca have been exceedingly limited, as a matter of course. A few speculative purchases made the price advance to 51l. at the beginning of the month, there being a few buyers, but no buyers. Billion has attracted a good deal of attention, and heavy arrivals both here and in Amsterdam making holders easier to deal with, a large business has resulted both in spot parcels and for forward delivery at from 45l. to 47l. During the last few days there has been considerable pressure to sell, the price declining to 46l., which is our closing quotation for parcels on the spot, there being no sellers of future deliveries below 46½l. : 10,000 pieces Billion offered in public sale at Batavia on the 14th inst. fetched the average price of 53l., costing to sell hereabout 48l. per piece. The ensuing sale, comprising an increase of the stock second hand of 166 tons, will be held on Monday, April 10. The position of Banca tin in Holland on Feb. 29, according to the official returns of the Dutch Trading Company, was—

|  |               |         |         |
|--|---------------|---------|---------|
| price of 53 fl., cost to sell hereabout 48 fl. per steamer. The ensuing sale, comprising the same quantity, will be held on Monday, April 10. The position Banca tin in Holland on Feb. 29, according to the official returns of the Dutch Trading Company, was— |               |         |         |
|  | 1875.         | 1875.   | 1874.   |
| Import in February .....   | Slabs 6,829   | 2,960   | 9,462   |
| Total two months .....   | 8,123         | 9,819   | 20,673  |
| Deliveries in February .....   | 9,722         | 9,228   | 12,025  |
| Total two months .....   | 14,741        | 14,984  | 18,283  |
| Stock second-hand .....  | 25,916        | 23,212  | 22,200  |
| Unsold stock .....   | 59,585        | 106,840 | 115,010 |
| Total stock .....  | 85,774        | 130,052 | 137,210 |
| Afloat .....   | Peculs 3,900  | 1,500   | 3,550   |
| Statement of Billiton:—  |               |         |         |
| Import in February .....   | 19,079        | 5,050   | —       |
| Total two months .....   | 19,879        | 10,250  | 3,000   |
| Deliveries in February .....   | 10,039        | 4,287   | 2,900   |
| Total two months .....   | 14,758        | 9,677   | 4,800   |
| Stock .....  | 34,800        | 32,179  | 24,250  |
| Afloat .....   | Peculs 15,000 | 8,000   | 6,145   |
| Quotation of Banca .....   | fl. 50        | 53 fl.  | 62 fl.  |

These combined returns of Banca and Billion for 1876, compared with those for 1875, exhibit—An increase of the import for February of 559 tons; an increase of the import for the two months of 248 tons; an increase of the deliveries for February of 166 tons; an increase of the deliveries for the two months of 136 tons; an increase of the stock second hand of 166 tons; a decrease of the unsold stock of 486 tons; a decrease of the total stock of 1302 tons; a decline of the quotation of Banca of 5l. per ton.—Rotterdam, Feb. 29.

Prices continued to droop throughout the past month, and towards the close the fall was accelerated by pressure to sell. The stock in London has grown to dimensions never before known, owing to the heavy arrivals. Deliveries were good: 1335 tons from London, of which 320 tons were transhipped to America. From Holland 300 tons Banca and 215 tons Billion were delivered. Supplies from the Straits and Australia also fell—730 tons from the Straits and 580 tons from Australia. According to latest telegrams values there have been higher than on this side. Owing to the action of the Dutch Trading Company Banca has been neglected, and Billion is in more demand. English is dull and lower.—March 2.

FRENCH AND SMITH.

## FOREIGN MINES.

FORTUNA.—Feb. 23: Canada Inco's: The 110, west of Judd's shaft, is in a small lode, containing no lead to value. There is no alteration in the 30, east of San Carlos shaft, since last report. The 40, west of Abercrombie's shaft, produces 1½ ton per fathom. The 60, east of San Pedro's, is in a large lode, yielding ½ ton per fathom. The 60, east of San Pedro's, is in a large lode, yielding ½ ton per fathom. The 110, east of Addis's shaft, is in a strong lode, showing spots of ore. The 90, east of this shaft, has improved, and yields ½ ton per fathom. The 80, west of Kennedy's shaft, is in a large well-defined lode, yielding ½ ton per fathom. The 90, west of this shaft, is without ore. The 90, east of Caro's is in a very compact lode, worth ½ ton per fathom. The 60, east of San Pedro's, is in a large lode, yielding ½ ton per fathom. The 110, east of Addis's shaft, is in a strong lode, showing spots of ore. The 90, east of this shaft, has improved, and yields ½ ton per fathom. 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with very good indications. The 80 fm. level to drive west on Warm Water lode, two men, at 12¢. per fathom; lode 1½ ft. wide, containing a little lead. The wind







Egyptians, 62½ to 63. British, 104½ to 104½; Sheffield, 74½ to 75; Caledonian, 130½ to 131, quite a Black Friday as regards the railway market.  
Birkenhead, March 3. FERDINAND R. KIRK.

\* With this week's Journal a SUPPLEMENTAL SHEET is given, which contains—Original Correspondence: On Coal and Coal Fields (R. Moore); Mining in Corsica; Swedish Iron Ore; Swedish Iron Ore (W. G. Bell); Mining in the East—No. 11; Jet Mining in Yorkshire; Coal-Cutting Machinery; Roswag's Process for Treating Metallic Substances (F. Maxwell Lyte); The Separation of Minerals (Robert Knapp); The Present Prospects of British Mining Encouraging: West Tolgus; Gold in Wales—No. XX. (T. A. Readwin); Sub-Welded Explorations; the West-Jewell Mine; Pennerley Mine; Richmond Consolidated Mining Company (T. W. Hall);—The Richest Mine in the World, and the Philadelphia Exhibition—The Almaden and Tinto Consolidated Silver Mining Company (Limited)—Cornish Mine Share Market—Steam Pumps for Deep Mines (Hayward Tyler)—On Machine Boring in Shaft Sinking—On the Use of Boring Machines at Schemnitz—Foreign Mining and Metallurgy—Registration of New Companies—Patent Matters.—Meetings of Llay Hall, Imperial Brazilian, South Aurora, Wheel Uny, Rookhope, Parys Mountain, Cara Brea, and Tincroft Companies.

## The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, MARCH 3, 1876.

| IRON.                                     | £ s. d.        | £ s. d.        | TIN.                            | £ s. d. | £ s. d. |
|---|----------------|----------------|---------------------------------|---------|---------|
| Pig, GMB, f.o.b., Clyde, 2 19 3           | 2 19 3         | 2 19 3         | English, ingot, f.o.b., 73 10 0 | 73 10 0 | 73 10 0 |
| " Scotch, all No. 1, 3 2 6-3 15 0         | 3 2 6-3 15 0   | 3 2 6-3 15 0   | " bars, 73 10 0                 | 73 10 0 | 73 10 0 |
| Bars, Welsh, f.o.b. Wales, 6 7 6-6 10 0   | 6 7 6-6 10 0   | 6 7 6-6 10 0   | " refined, 75 10 0              | 75 10 0 | 75 10 0 |
| " in London, 7 2 6-7 5 0                  | 7 2 6-7 5 0    | 7 2 6-7 5 0    | Australian, 72 0 0              | 72 0 0  | 72 0 0  |
| " Stafford, 8 15 0-10 5 0                 | 8 15 0-10 5 0  | 8 15 0-10 5 0  | Banco, 76 0 0                   | 76 0 0  | 76 0 0  |
| " in Type or Tees, 7 1 0                  | 7 1 0          | 7 1 0          | Straits, 71 10 0                | 71 10 0 | 71 10 0 |
| Swedish, London, 15 10 0                  | 15 10 0        | 15 10 0        |                                 |         |         |
| Rails, Welsh, at works, 5 15 0-6 0 0      | 5 15 0-6 0 0   | 5 15 0-6 0 0   |                                 |         |         |
| Railway chairs, 10 0 0                    | 10 0 0         | 10 0 0         |                                 |         |         |
| " spikes, 10 0 0                          | 10 0 0         | 10 0 0         |                                 |         |         |
| Sheets, Staff., in London, 11 0 0-12 10 0 | 11 0 0-12 10 0 | 11 0 0-12 10 0 |                                 |         |         |
| Plates, Staff., in London, 15 0 0-12 10 0 | 15 0 0-12 10 0 | 15 0 0-12 10 0 |                                 |         |         |
| Hoops, Staff., 9 15 0-10 5 0              | 9 15 0-10 5 0  | 9 15 0-10 5 0  |                                 |         |         |
| Nail rods, Staff., in Lon., 8 5 0-9 0 0   | 8 5 0-9 0 0    | 8 5 0-9 0 0    |                                 |         |         |
|   |                |                |                                 |         |         |
| STEEL.                                    |                |                |                                 |         |         |
| English, spring, 18 0 0-25 0 0            | 18 0 0-25 0 0  | 18 0 0-25 0 0  |                                 |         |         |
| " cast, 15 0 0-20 0 0                     | 15 0 0-20 0 0  | 15 0 0-20 0 0  |                                 |         |         |
| Swedish, 15 10 0                          | 15 10 0        | 15 10 0        |                                 |         |         |
| " fag. bam., 21 0 0                       | 21 0 0         | 21 0 0         |                                 |         |         |
|   |                |                |                                 |         |         |
| LEAD.                                     |                |                |                                 |         |         |
| English, pig, common, 22 0 0              | 22 0 0         | 22 0 0         |                                 |         |         |
| " L.B., 22 5 0                            | 22 5 0         | 22 5 0         |                                 |         |         |
| " W.B., 24 0 0                            | 24 0 0         | 24 0 0         |                                 |         |         |
| " sheet and bar, 23 5 0                   | 23 5 0         | 23 5 0         |                                 |         |         |
| " pipe, 24 10 0                           | 24 10 0        | 24 10 0        |                                 |         |         |
| " red, 24 0 0-25 0 0                      | 24 0 0-25 0 0  | 24 0 0-25 0 0  |                                 |         |         |
| " white, 28 0 0-29 10 0                   | 28 0 0-29 10 0 | 28 0 0-29 10 0 |                                 |         |         |
| " patent shot, 28 10 0                    | 28 10 0        | 28 10 0        |                                 |         |         |
| Spanish, 21 10 0                          | 21 10 0        | 21 10 0        |                                 |         |         |
|   |                |                |                                 |         |         |
| QUICKSILVER.                              |                |                |                                 |         |         |
| Flasks of 15 lbs., ware, 10 0 0           | 10 0 0         | 10 0 0         |                                 |         |         |
|   |                |                |                                 |         |         |
| SPELTER.                                  |                |                |                                 |         |         |
| Silesian or Rhenish, 23 0 0               | 23 0 0         | 23 0 0         |                                 |         |         |
| English, Swansea, 23 0 0                  | 23 0 0         | 23 0 0         |                                 |         |         |
| Sheet zinc, 23 0 0-23 10 0                | 23 0 0-23 10 0 | 23 0 0-23 10 0 |                                 |         |         |

\* At the works, 1 lb. to 1 s. 6d. per box less for ordinary; 10s. per ton less for Canada; 15s. 6d. per box more than 100 quoted above, and add 6s. for each X.

Terne-plates 2s. per box below tin-plates of similar brands.

REMARKS.—The Metal Market continues in the same inanimate condition noticed last week, and the further decline in both copper and tin has had no effect whatever in creating a demand.

COPPER is very dull, and the heavy decline in the standard at the Cornwall Ticketing yesterday has been followed by increased disinclination on the part of buyers. For strong English sheets 80½ has been accepted. There have been small sales of Chili bars at 70½, and buyers are pretty readily to be found at 75½ per ton. Great difference of opinion prevails as to the effect which will be produced by the Wallaroo quarterly auctions, but those best informed appear to think that after the first sale it will be rather favourable than otherwise.

TIN is extremely difficult of sale, but a few hundred tons were disposed of at 72½ for English, and from 17 to 17½ for Straits and Australian.

IRON.—Iron shows no important change; but there is scarcely so much doing as last week, and the advances from the Continent are anything but favourable. Scotch pig is duller, and freely offered at 59s. 3d.

ZINC is at least 3½ per ton lower, scarcely one-half of the 120 tons offered for public sale on Thursday having found purchasers at 28½. LEAD is tolerably firm, although from the probability that the cessation of hostilities in Spain may adversely affect prices, buyers are not much disposed to operate.

TIN-PLATES remain without material change.

THE IRON TRADE.—(Griffiths's Weekly Report).—Friday Evening.

There have been some fluctuations in the price of pig iron on the Glasgow Exchange this week. Business to some extent was done on Monday as low as for warrants on this Exchange. Since then, indeed next day, a rally took place. The price this afternoon leaves off at 59s. 6d., sellers, being an advance in price since last Friday of 6d. per ton. We quote makers No. 1 iron—Gartsherrrie, 70s.; Coltness, 72s.; Calder, 71s.; Langloan, 70s.; Summerlee, 69s.; Monkland, 61s.; f.o.b. Glasgow; Clonsarnock, 67s.; Eglinton, 68s. f.o.b. Ardrossan; Shotts, 70s. f.o.b. Leith; Kennel, 63s. f.o.b. Boness. Our market for all kinds of iron is steady, without change in price. In all kinds of common iron, however, the great struggle being confined to the Belgian and Cleveland houses. The former, however, constantly anticipate the falling tendency of the market, and the iron used for building purposes, both in large and small lots, is constantly taken by Belgian agents. For Channel iron, which foots up every week to a large item, there seems to be no attempt in this country to compete; the consequence is the Belgians, as a matter of course, monopolise this trade in London. The freight from Antwerp being so very low seems to conspire with the lower wages current in Belgium to give the ironmasters a complete possession of our market for Channel and several other kinds of inferior iron.

The price of marked Staffordshire bars here continues firm, with a moderate business. There is a steady business doing in hoops. Sheet iron is in diminished demand. Boiler plates of the very best quality, both Yorkshire, Staffordshire, and Shropshire, are in better request. The famous Bowling Works have recently received some good orders from the Continent, and are busy in all departments. One or two of the other noted Yorkshire and Staffordshire houses have had good accessions of orders last week. We have little change to report in the raw material, Staffordshire and the West coast prices firm, business quiet. Midlandsborough prices weak, market flat; Glasgow prices better. Course of the market uncertain; all depends on shipments, which are at present undecided. The tin-plate trade continues very dormant; prices unremunerative. The Conference held last week here has left a favourable impression, and it is thought that the eminent men at the head of this new Association will be able to ameliorate the injuries now perpetuated on the trade of the Mines Regulation and Factory Acts, extend the hours of labour, and arrange the new tariff of wages commensurate with the reduced price of iron in all departments.

COPPER.—Messrs. Richardson and Co., March 1: The private sales of Chili copper produce during February were—ore, 185 tons; regulus, 573 tons; and copper, 572 tons; the present market being—ore, 2250 tons, and copper, 1353 tons. There is also lying unsold at Swansea 515 tons of Newfoundland ore, and 110 tons of Spanish ore, raising the total fine copper represented to 3250 tons. The private sale of furnace material that have been reported are—600 tons of ore and 200 tons regulus to arrive, at 16s. 3d. and 16s. 9d. respectively; one parcel about 150 tons ore "spot," at 16s. 6d.; and 520 tons regulus "spot," and 600 tons "to arrive," at 16s. 6d. per unit. The advances from the West Coast have been—For the last half of January 2100 tons—700 in bars and ingots, and 1400 in ore and regulus, for England, and 2000 bars for France; for the first half of February, 1900 tons—950 bars and ingots for England, 950 bars for France. Our copper market continues its inanimate career; buying only to fill up immediate wants seems to have become quite a prevailing feature, nevertheless the consumption of this article continues on its usual scale. The general monotony has been somewhat aroused this month by the decision of the consignee of Wallaroo to sell it henceforth by public auction; the first sale is to take place on the 25th inst., when 2000 tons in cakes and ingots, chiefly the former, will be offered. This quantity comprises the entire stock now in hand. These public sales will take place quarterly. Important holders are inclined to think this step, although at present perhaps causing a depression, will ultimately give a favourable turn to the general trade of this article.

MESSRS. FAY, JAMES, AND CO.—COPPER has fallen from 2½ to 3½ per ton in quotations without bringing buyers to any satisfactory extent. The market had been quiet, with a small daily business doing, up to the 25th ult., when the announcement of a sale by auction, on the 28th inst., of 2000 tons of Wallaroo copper caused a very general mistrust amongst buyers, and resulted in the fall above referred to. The quantity of this particular copper available is not extraordinary, but it has hitherto been sold by private sales in the ordinary way; and it is, therefore, only the novel course taken—that of selling in one day at public sale—that had previously been well over three months—which has disturbed the market.—TIN has continued to drop since our last report, and is about a further 4½ to 5½ per ton lower all round; there is no present appearance of relief from this depressed condition of the article. Such low prices have not been touched since 1850.—SPELTER has at last followed the downward course of our market, and is about 10s. per ton lower.—LEAD is dull at the late decline.—TIN-PLATES are very flat, and some extremely low prices have been accepted.

MR. MURRAY.—TIN: In foreign the fall has been rapid and heavy, representing a loss of 8s. per ton for the past month; and all the holders seem to have made a rush to get out of their bargains. This is disappointing, after having been told so often by the prophets that the "bottom" was at last reached; at the same time, it is to be presumed that prices cannot go on dropping ad libitum;

and as operators are aware of this, very few "bear" transactions now occur. The month's sales, as reported by the committee, are modestly at 72s. to 80s. 6d. for cash and forward Straits and Australian.—COPPER: In Chili the drop shown for loss of 6½ per ton for the past month, the tendency being still downwards. Holders do not, however, offer their parcels very freely, and but little business will take place until the result of the "Wallaroo" affair is known. The look-out at the moment is most gloomy for all concerned. The committee report a small business for the month at 75½ to 81½ ss. cash.

MESSRS. SANFORD AND BIRD.—COPPER has declined about 2½ per ton during the month, and closes with a downward tendency. The demand for manufactured is not brisk, and prices are all round easier.—TIN has also fallen considerably during the month, and being pressed for sale, closes weak.—QUICKSILVER closes at 10½ per bottle.

MESSRS. PEXLEY AND ABELL.—GOLD: The arrivals since our circular of the 24th ult. have been—28,910½, per Deccan, from China; 220,000½, per Pomerania, from New York; 23,000½, per Flechero, from New Zealand; 81,360½, per Nile, from West Indies; total, 355,270½. Some orders on private account for France, in addition to those to Germany, have absorbed this total, and any immediate supplies will also be taken for export. Sovereigns from the North of Europe continue to be sent into the Bank, the amount during the week being 123,000. The Tasmanian takes 3000½ to the West Indies.—SILVER: The Indian exchanges are again lower, and show no signs at present of recovery; although no allotment of council drafts was made yesterday, the price of silver has again declined, and show a fall since our last circular of about 3½ per ounce. The amounts now on the market from New York and the West Indies make a total of about 105,000; in addition to this sum, the Pacific steamer is due on the 4th inst. with 100,000. The silver, ex West India steamer, has been sold to-day at 52½d. per oz. standard. The P. and O. steamer, leaving to-day, takes 45,000½ to Bombay.

THE MINING SHARE MARKET has been rather easier this week in regard to quotations; and there has not been so much business transacted in either tin, copper, or lead mines.

Since our last the tin standards have again been put down, and this time 4½ per ton; consequently the price of tin is now lower than it has been for the last twenty years, and our remarks of last week on the necessity of curtailing expenses in all mines, and stopping many that are unprofitable, are still further strengthened; and they are illustrated also by some of the meetings of the week.

The present state of the tin market has been brought about by the heavy arrivals of Australian tin, which is raised in some cases, it is said, at about 10½ per ton; it costs 8½ per ton land carriage to the coast, and then it comes over as ballast in wool ships. How long the shallow deposits that enable miners to raise tin at this low rate will last is a serious consideration to the Cornish miner, though it is some consolation to them to know that some of the Australian mines cannot produce tin ore under 50½ or 60½ per ton.

At the copper ticketing in Cornwall on Thursday 2061 tons of ore were sold, for 9810½ 2s. 6d., being an average of 4½ 15s. per ton. The average produce was 7, standard 107½ 2s.

The shares dealt in since our last have been East Van, North Laxey, Rookhope, Van, Roman Gravel, Tankerville, West Tankerville, Wheel Crebber, Pateley Bridge, West Pateley Bridge, Parys Mountain, Tincroft, Great Laxey, West Chiverton, Wheel Uny, Penstruthal, Santa Barbara, and a few others.

Cara Brea, 30 to 32½; at the meeting here the accounts showed a loss on three months' working of 1861½, or over 600½ per month. The costs, which amount to 10,236½ for the quarter, are only charged up to September, and tin sales, credited to the meeting, 7642½. Mr. Basset, the lord, has reduced the dues from 1-24th to 1-48th during pleasure. In the 238 fm. level, east of cross-course, the lode is worth 40½ per fathom; 238 west, 15½. Tincroft, 17½ to 18; at the meeting, held on Thursday, a dividend of 5s. per share was declared. The accounts, charging up the costs to September last, showed a profit of 1564½ on the quarter, and a credit balance of 1724½. The tin sales—180½ tons—realised 7900½, and this same quantity three years ago, the agent stated, would have given a profit of 9000½. The lode in the 234 east is worth 10½ per fathom; 210 east, 15½. Chapel's lode in the 246 is worth 20½ per fathom, and the mine continues to yield the usual quantities of tin. Wheel Uny, 15s. to 20s., call paid; at the quarterly meeting, held on Tuesday, a call of 5s. per share was made. The accounts showed a loss on three months of 1200½, and a balance against the mine of 1465½. The various points in operation on the tin lode were valued in the aggregate at 160½ per fm. Devon Great Consols, 4½ to 4½; the mine has sampled 1225 tons of copper ores for the month, and the various points in operation are worth in the aggregate 50 tons of copper ore, or 216½ per fathom.

Gunnislake (Clitters), 2½ to 2½; at the meeting here five months' costs to Jan. 8 were charged against four months' returns of copper (4210½). A profit was shown of 1142½ 9s. 4d., and a credit balance of 2445½ 17s. 9d., out of which a dividend of 2s. per share (983½) was declared, leaving a balance in hand of 1462½ 17s. 9d. The mine is looking well. The shaft is down 10 ft. below the 188. In this level the lode has been opened upon 7 fms., and has raised in value 15½ to 70½ per fathom.

Roman Gravel, 14½ to 14½. Tankerville, 11½ to 12½; the 167 has now been opened on the course of the great lode for 12 fms., the west end having reached the western branch of ore. The prospects in the bottom of the mine, the agent states, are such as to warrant the continuance of the dividends. West Tankerville, 2 to 2½; the mine has sampled 20 tons of lead ore. South Roman Gravel, 1½ to 1½. Ladywell, 2½ to 2½. Pateley Bridge, 6 to 6½; one or two points have improved here. West Pateley Bridge, 5½ to 5½. West Craven Moor, 11 to 12.

Rookhope, 1½ to 1½; in the back of the adit the lode is worth 15 cwt. of lead ore per fathom—working at 2½ 10s. per fathom. In the back of the 25 it is worth over 2 tons of lead ore per fathom, and working at 26s. per fathom. The 25 is the deepest level, and above this the agent hopes to raise lead sufficient to pay all costs of the mine until the 42 is driven up to the ore ground, when large returns are expected. Van, 4½ to 4½. East Van shares have been weaker, at 17½ to 18, but leave off 18½ to 19½. Great Laxey, 17½ to 18½; North Laxey, 1½ to 1½; the lode at the shaft has increased to 5 ft. wide, and improving in appearance. In the 84 the main part of the lode has been cut whole to surface; this new feature the agents consider very important. Marke Valley, 3 to 3½; Old Treburget, 10s. to 12s. 6d.; Parys Mountain, 16s. to 20s.; at the meeting, held to-day, particulars of which will be found in another column, the accounts and directors' report, referred to last week, were unanimously adopted. Bedford United, 20s. to 25s.; Aberdaunant, 20s. to 25s.; Cook's Kitchen, 2½ to 3½; Dolcoath, 34 to 36; East Caradon, 2½ to 2½; East Lovell, 4 to 5; Pennerley, 1½ to 1½; Penstruthal, 7s. 6d. to 8s. 6d.; Plympton, ½ to ½.

Providence, 1 to 1½; Cathedral, 25s. to 30s.; Great West Van, 15s. 6d. to 17s. 6d.; Pennant, 5 to 5½; South Carn Brea, 1½ to 1½; South Caradon, 12s. to 13s.; South Condurrow, 4 to 4½; Van Consols, 2½ to 2½; West Chiverton, 18½ to 19½; West Great Work, 3 to 3½; West Seton, 32½ to 35; West Tolgus, 62½ to 67½; Wheel Basset, 7½ to 12½; Wheel Crebber, 2 to 2½; Wheel Grenville, 1½ to 2½; Wheel Kitty (St. Agnes), 2 to 2½; New Rosawarna, 3 to 3½; Relistian Consols, 3 to 3½.

Argentine, 7 to 7½; Condes, 6½ to 7½; Don Pedro, 3 to 3½; Eberhardt and Aurora, 8 to 8½; Flagstaff, 2 to 2½; Frontino and Bolivia, 1½ to 2½; Javali, 9s. to 11s.; Richmond, 6 to 6½. San Pedro, 3½ to 3½; the advances this week, though disappointing in one respect, show a fine discovery in the 88 end, which may lead to good results. Sweetland Creek, 2½ to 2½; Santa Barbara, 27s. 6d. to 30s.

The Market for Mine Shares on the Stock Exchange during the week has continued firm for lead descriptions; not so with regard to tin and copper mines, which have been flatter.

Van, East Van, Roman Gravel, Pateley Bridge, Grogwinion, Tankerville, Great Laxey, North Laxey, West Pateley Bridge, Rookhope Valley, and West Tankerville have been the mines chiefly dealt in.

Van shares have risen to 41½ 42½; the cross-cut in the 105, towards the lode, is extended 4 fms., and presents a good appearance, as nice facings of lead are seen in the joints. Other parts of the mine are without change, the lode in the 75, west of the shaft, continuing worth 200½ per fathom. East Van shares, in the early part of the week, were 2½ to 2½, but gradually declined to 17½ 18, and rallied to 18½ 19, closing 18½ to 19½; some disappointment has been felt at the lode not being cut in the No. 2, or "B" cross-cut. As the Van lode varies in width from 60 to 15 ft., no positive calculation can be made to within a fathom or two as to the exact distance at which the intersection will take place. Driving has been commenced on the lode where the discovery was recently made towards Van, and there are indications that the lode will prove of still greater value than where cut through; so far as seen it is very rich. Men have also been put to further cross-cut the lode at this point; for,

although there have been 36 ft. driven into the lode, it is evident it has not been entirely intersected. The distance between the present discovery and the Van Mine is upwards of 100 fms.—a sufficient length to make a mine of equal magnitude to Van, should the lode hold rich from the point of intersection to the Van boundary, without taking into account the value of the ground to the east.

Pateley Bridge, 6 to 6½; an important discovery has been made on the San vein in that part of the mine drained by the Eagle level to a depth of 60 or 70 fms. The shaft is down 9 fms., and in the bottom of the shaft the lode is from 7 to 8 ft. wide; worth 11½, and the stopes worth 15½ per fathom. This is an entirely new feature, proving the correctness of the reports made on this part of the mine, where there is every indication of opening up a permanent and very profitable property. West Pateley Bridge, 5½ to 5½; operations are in active progress, and the general prospects are considered as favourable for an early success. Grogwinion, 5½ to 6½; the recent improvement in the No. 4 lode in the 12 holds good, and has increased in value, it being now worth, in the winze sinking below that level, 1½ to 2 tons of lead per fathom. The importance of this discovery can scarcely be overrated, seeing that this No. 4 lode is standing whole from the 12 to the deep adit, a distance of about 70 fms., and that it can be worked in no less than six levels, which are driven, or being driven, between these two points. It will, of course, add materially to the reserves of the mine, as it is by far the richest lode and most profitable to work in the sett. The other lodes are yielding the usual amount of lead, and the manager reports that the mine never before looked so well. Van Consols, 2½ to 2½; the mine continues steadily to improve. The works are being carried on in a miner-like manner; 25 tons of lead were sold this week. Wye Valley, 6 to 7; a sale of 40 tons of lead has been made this week at 15½ 2s. 6d. per ton. In driving the adit an important discovery has occurred, a new run of ore ground having been met with about 100 fms. east of the present stopes. The manager says that it is probable this will prove a most valuable deposit, but he will be able to report more in a short time. West Wye Valley, 3½ to 4½; good progress continues to be made at all points. The ground adjacent to Brooke's shaft continues to open out well.

Great West Van, 12s. 6d. to 17s. 6d.; good accounts continue to be received from the mine. The Eliza shaft will shortly be down to the required depth for a cross-cut to the lode. This is one of the most important works in the mine, and the cutting of the lodes at this point will doubtless result in a course of lead. West Goginan, 2½ to 2½; the dressing of lead by the new machinery has commenced, and sales will shortly follow. The shaft continues to go down in a fine course of ore, and the various levels and stopes are steadily improving. Now that dressing has actually commenced profits will be quickly made, as there is a large extent of ground opened out and a good supply of ore. Pennerley, 1½ to 1½; a full report will be found in another column. The 120 west is looking very promising, and the agent is expecting an improvement shortly; now worth 1 ton of lead per fathom. The indications are also good in the same level east. At Potter's pit the progress of the shaft below the 75 is satisfactory, and generally the mine is looking better. Llanidloes, 3 to 3½; further satisfactory progress has been made in opening out the bottom of the mine, and the lode is found of a uniform profitable character, fully justifying and strengthening the belief that large returns will be quickly made. The mine is looking exceptionally well in the deeper workings, and the operations are being vigorously pushed ahead. Another sale of lead will be shortly made.

Silver Mines have been a most irregular market; the prominent feature on the favourable side has been an active enquiry for Condes of Chili, changing hands at 6½ to 7½, closing 6½ to 7. Capt. James Saccombe has accepted the post of resident agent, and sails from Liverpool on March 8, by the Pacific Royal Mail steamer. Mr. Coward, of the Argentine Company, who has inspected the mines, has forwarded his detailed report, and will be to hand in about 14 days, meanwhile the mines are being worked on the company's account, and the February ores will be shipped early this month. Exchequer, 1 to 1½; the 200 and 300 are yielding fine ore, and the 140 winze is again looking well. The next advances will probably bring details of the information cabled a fortnight since. I. X. L., ½ to 1½. South Aurora, ½ to ½; the general meeting is reported in another column. The Corsican copper mines in which the company have invested capital are considered to present favourable prospects, and importance seems to be attached to the fact that a large interest in them is held by residents in Cornwall. Power was given to the directors to distribute the bonus shares among the proprietors, but not to be exercised without their special sanction.

Flagstaff shares have advanced to 2½, upon apparently well-authenticated reports that the mine had considerably improved, and that equitable arrangements have been all but concluded by which upon favourable terms the shareholders will gain possession of the mine. Emma, 2½ to 2½; the proceedings in the House of Representatives has been adjourned, in order that Senator Stewart and General Schenck may confront Mr. Lyon in open court. The matter is referred to in another column. Richmond Consolidated, 6½ to 6½; the week's run was 34,000, ore body between 6th and 7th level untouched, and the general prospects of the mine are excellent. The weekly report, dated Feb. 7, from the manager (Capt. Rickard) appears in another column. At that date it was mentioned a mixture of fuel had been used—coke and coal—and had it not been for the constant burning through of the furnaces this mixture gave very good results. The No. 2 had been in blast 157 days, the longest run ever made with any furnace in Eureka with one lining. Eberhardt and Aurora, 8 to 8½.

Quartz Mines have been represented by St. John del Rey, Argentine, Rossa Grande, and a few others. St. John del Rey, 350 to 390; Argentine, 7 to 7½; advices dated Jan. 15 state that the 44 cross-cut in the Captain section is being driven by a full force of men, when it is expected the lode will be intersected of the same value as at Pique; at the Chairman section the old workings are being cleared up, and large quantities of refuse ore are being accumulated. At the meeting to be held on Thursday important details will be submitted. Don Pedro, 3 to 3½; a telegram has been received to the effect that the underlie lode has been met with, and sinking resumed. Rossa Grande, 4 to 4½; the favourable opinion of the property expressed by Mr. Gordon, the manager of St. John del Rey, has caused the shares to be in demand; Mr. Gordon resides within a few miles of the mine, and has personal knowledge of it; for some time the shares have had but a nominal value, but now are in request at advancing quotations. Frontino and Bolivia, 2 to 2½; although the profit for the month of December was less than anticipated, it will be seen on a perusal of the manager's report, printed in another column, that the prospects of the mines were never better, and but for a scarcity of water the profit for December would have been much greater. This difficulty will eventually be overcome by the use of steam-power, one engine being already on the spot, and another ordered to be sent out as soon as ready.

Blue Tent, 3½ to 4½; looking at the position this company is rapidly assuming, it may be interesting to our readers, especially as we know that many of them are connected with the concern, to concisely lay before them the position and prospects of the company. In the able report made by Prof. Silliman, it is stated that "this enormous mass of auriferous gravel considered in its entirety, the facility of its approaches, and the water which is now, or can be, brought to bear upon it, is without a rival in California," and this statement, remarkable as it may seem, is substantially confirmed by G. D. McLean and Prof. Price, the latter of whom in his report, submitted to the last annual meeting, calls particular attention to the fact that the company is now in a position of self-dependence as regards the successful working of the claims, as it possesses all the elements necessary for profitable hydraulic mining—an extensive tract of auriferous gravel situate on the true belt, and of undoubted richness, a good and permanent outlet for expeditious work, and the disposition of tailings, and a large and well-constructed ditch affording a large volume of water. It will be seen, therefore, that the position of the company, both as to the situation of the property and the value of the auriferous gravel, as well as the facilities for economic working, is everything that can be desired. The prospects of the company are equally







### Notices to Correspondents.

\* Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be *sent on receipt*; it then forms an accumulating useful work of reference.

**COLLIERY SHARES.**—In last week's Journal, under the article "Collieries," I observe Richards Co. shares quoted as closed at 10s. to 10s. 5s. Since observing that quotation in the Journal I have ascertained definitely that such is not the case. They are 10s. shares, but 8s. only as yet been called up on them; and, further, they have never been quoted at par value, much less 2s. premium as the Journal states last week. The last transaction was done at 2½ dis.—E. M.

A correspondent informs us that the "Mines of Wicklow," enquired about in last week's Journal, was published by C. H. Law, 113, Great Russell street, Bloomsbury, London.

**SHARE DEALING.**—We never interfere in the sale or purchase of shares; neither do we recommend any particular mine for investment or speculation, or broker through whom business should be transacted. The addresses of most of the latter appear in our advertising columns.

**THE SUPPLEMENTARY SHEET.**—We have received occasional complaints, and of late a good many, that the Journal is delivered by country booksellers without the Supplement. Subscribers would oblige us by demanding that the paper should be handed to them complete, as every Journal is accompanied by the Supplement when it leaves our office, and the fault of omission must rest with the country bookseller or their London agent.

Received.—"B. S." (Belgrade)—"T. H. B." (New York)—"M." (Neath)—"Constant Reader"—"G. B. L." (Shareholder)—"Wheat Coates"—"E. J. H."—"Alpha"—"Shareholder" (Don Pedro)—"Stannum"—"We shall be glad to have all the particulars"—"S. T."—"E. M." (Edinburgh)—"Novice" should obtain the "Glossary of English and Foreign Mining Terms," 2s.

**IMPORTANT NOTICE.—REDUCTION OF POSTAGE ON THE "MINING JOURNAL."**—In consequence of the new Postal Convention, which came into operation on July 1, the postage of the *Mining Journal* to many countries will be reduced to one fourth. Henceforth the subscription will be 1s. 4d. per annum (39 frs.), postage included, for the following countries. The amount will, if desired, be collected at the subscriber's residence at the end of each year. The subscription continues until countermanded:—Austria, France, Belgium, Denmark (including Iceland and the Faroe Islands), Egypt, Germany, Gibraltar, Greece, Heligoland, Italy, Luxembourg, Netherlands, Norway, Portugal (including Madeira and the Azores), Roumania, Russia, Servia, Sweden, Switzerland, United States, Malta, Turkey, Morocco, Tunis, and the Canary Islands. Spain 1s. 19s. (50 frs.)

**AVIS IMPORTANT.—AUX ABONNÉS ÉTRANGERS DU "MINING JOURNAL."**—A cause de la nouvelle Convention Postale il y avait, à partir du 1er Juillet 1875, une grande diminution du prix de l'abonnement du *Mining Journal* pour bien des pays dont le taux des postes était jusqu'à présent élevé. À partir du 1er Juillet le prix de l'abonnement est de 39 frs., le port compris, pour l'Autriche, Belgique, France, Danemark et ses dépendances, l'Égypte, l'Allemagne, la Grèce, l'Italie, Hollande, Portugal et ses dépendances, Roumanie, Russie, Serbie, Suède, la Suisse, la Turquie, l'Afrique septentrionale, etc. Le montant, si l'on le veut, sera touché à domicile, la fin de l'an. L'abonnement continuera sauf avis contraire.

## THE MINING JOURNAL.

### Railway and Commercial Gazette.

LONDON, MARCH 4, 1876.

#### FOREIGN COMPETITION, AND THE BRITISH IRON TRADE.

We are in a position to state that the competitors with England in the home iron market are again at work, and not without success. At the present moment certain Belgian tyre mills and axle forges are quite busy in the executing of orders intended for the English market. Nor is this all. Belgian sheets and other classes of finished iron made in that country are to be had in Liverpool at much under the prices required for a similar quality by English makers. More, cut-nail makers in the very heart of South Staffordshire are cutting up in their shops nail-sheets which they have bought from Belgium on terms with which the Staffordshire makers cannot compete. And that we cannot at home contend against such prices will be abundantly clear when we state that the price delivered is under 9s. per ton. We all know how much under our make of iron is that of Belgium—that all Belgium through the makes does not aggregate a greater total than can be produced in the single district of North Staffordshire. Yet the sales which we have mentioned are in the interest of the home industry to be regretted at a time when orders are so sadly needed in all our English districts, and it is when we want new business that the Belgian competition is felt and becomes noteworthy. Hence that little but spirited kingdom has plenty of capacity in respect of its enterprise in the metal trades to prove itself a rival whom we would do well not to consider worthy of ridicule merely. The more so as it is a fact equally within our knowledge that in the past few weeks the Belgian iron trade has made arrangements which, in a mechanical sense, will considerably increase its capability to make its existence felt by English ironmasters. Nor is its readiness to avail itself of approved mechanical helps confined to the iron industry; we are stating only what should be generally known that one at least of its steel-making firms have lately sent to the States to learn how most economically to manage the Bessemer apparatus. The foreman so instructed is now using in Belgium for the advantage of his employers the information acquired in the new world.

And it is the progress which the Transatlantic metallurgists have made which has given so much point to the enterprise of the Belgians; for if the Americans had not been able to make iron and steel in their own country with no less skill than we can make it here, and in a few cases with even more skill, we should not now have been in the want of orders which makes the current enterprise of Belgium noteworthy in these columns. As we last week hinted in regard to the iron trade of Wales, so now we have to remark with respect to the British iron trade as a whole—that it does not appear to enough estimate the significance of what the American iron and steel masters have lately done. Are not our ironmasters attaching too much importance to the restrictiveness of foreign tariffs, and too little to foreign ingenuity and foreign enterprise. Great Britain has so long held an unapproachable position in the metal world that we are reluctant to believe that we do not now hold as foremost a place as ever. This tendency has just recently experienced a rude surprise in the steel rail trade of Sheffield in particular; and if we are not wise, and evince our readiness to look the whole truth fully in the face, this local surprise will presently be followed by one of much wider operation. The iron and steel masters at their conference last week, which we described in our last, did not seem to us to attach enough significance to this phase of the foreign trade question. Maybe Mr. CLARK and the rest look upon it as appertaining more or solely to the deliberations of the members of the Iron and Steel Institute, of which the British Iron Trade Association is now the twin society. And it is satisfactory to know that the older organisation is no stranger to much that has been accomplished, alike upon the continent of Europe and throughout America, whilst the report upon the Centennial Exhibition, for which the younger society has made arrangements, may well supplement the information previously in the possession of the Iron and Steel Institute.

We have no fear for the great iron and steel trade of these kingdoms so long as all engaged in it will not unwisely depend too much upon the natural advantages and native skill, giving insufficient credit to others' ability to supply their own markets with as good products as we can make for them, and at a cost which displays a tendency to steadily decrease. It may be taken as certain that the American ironmasters will find out how to reduce their working charges below the point to which separate reductions since the war have brought them. Not even the lower duties contemplated by the new Tariff Bill would, if they should be adopted by the Senate at Washington, be enough to attract more English iron at present comparative prices than perhaps some small consignments of best bars. As to Belgium, its wages facilities continue to go hand in hand with its progress in mechanical aids. Whilst in 1874 the cost for labour of raising a ton of coal in Belgium was 1s. 10d., it fell in 1875 to 1s. 2d. per ton. Happily the recent awards of arbitrators and Conciliation Boards in South Wales and the North of England will soon come to the help of the English coal and iron trade, when, if it should be possible to bring down the prevailing quotations, we may perhaps be able to shake off the troublesome nibbling of the Belgian mouse; but operatives must combine heartily

with mechanical engineers and metallurgical chemists if the work for which the British Iron Trade Association has been founded is to receive the aid without which the new organisation will prove of only very partial effect.

#### THE NATIONAL FEDERATION OF EMPLOYERS.

It is almost impossible to over estimate the importance of the meeting which was held in the Westminster Palace Hotel last week, in reference to the National Federation of Employers. It is certainly a sorry thing to see that the necessity exists for the establishment of such a society, but the whole relationship between employers and employed has been so disarranged and thrown out of gear by the misguided policy of the leaders of Trades Unions that no impartial observer can doubt the absolute need of the federation. The old system of reciprocity between master and man, which formerly existed with such happy effects, has been completely destroyed by those gigantic associations or unions of workmen, which recognise strength rather than right, and refuse to listen to reason and discretion, even when facts and figures are against them. Union must, therefore, be met by union; but we repeat that it is not pleasant to see the strength of capital arrayed in conflict against the strength of labour. The federation of the masters, however, has been imperatively demanded by the action of the men; and, should the Unionists be now fought with their own weapons, and find the great ironworks and manufactories shut against them, even when they plead for terms, they will have themselves to blame for having too blindly followed the behests of antagonism and strife embodied in the persons of the leaders of Trades Unions. The British Iron Trade Association, which held its first general meeting in the Westminster Palace Hotel, has also been called into being for the same purpose of self-protection, and is closely allied to the National Federation of Employers. The Iron Trade Association has, unquestionably, distinct and important objects in view, worthy the hearty support and cordial co-operation of everyone connected with the make of British iron. The speech delivered by the president, Mr. GEORGE T. CLARKE, of Dowlais, should be attentively read and perused, for it not only sets forth the object of the association, but it deals in an able and practical manner with many questions of vital moment to the trade. During his remarks Mr. CLARKE said that "their immediate and direct business as British manufacturers is with British Unions; but, as these combinations exist in extreme forms elsewhere, our association will have to pay attention to the fruits which they produce in other countries." The greatest efforts are being made in many foreign countries towards "protection," which virtually means the exclusion of British iron and manufactures; and, although this country will never again give up the blessings of free trade, there are many aspects and questions upon which the weight and strength of the British Iron Trade Association can be brought to bear with advantage upon the general interests of trade. We may take it for granted that whenever a question of vital moment has to be fought between the masters and men the issues will be upon an altogether different basis—the area will be very much enlarged, and the men will find that their Trades Unions are now met with a federation of employers throughout the kingdom; and if the British Iron Trade Association also sides (as it is manifestly their interests and intention so to do) with employers generally, the result is not difficult to foresee.

#### COLONEL BERTON'S MISSION TO THE UNITED STATES—

THE MONETARY QUESTION—THE METALLIC WEALTH OF CALIFORNIA AND NEVADA.

The serious pre-occupation that exists in Europe with regard to the rapid depreciation of silver, and, on the other hand, the unprecedented and ever-increasing production of the great silver mines of Nevada, gives an unexceptional importance to the mission which has been entrusted to Col. Berton, President of the Pacific Coast Mining Bureau, by M. Léon Say, Minister of Finance, and Mr. L. Ruau, Director-General of the French Mint. It is to be noted that both the English and French leading press have commended M. Léon Say for the enlightened appreciation he has shown of a public want in setting the enquiry on foot at present, and also on his judgment of the Commissioner. It has been rightly acknowledged that Col. Berton's qualification for reporting on the monetary question in the United States, and on the Metallic Wealth of California and Nevada, and the prospects of production are unique, while his association with the English and French leading newspapers may be taken as a guarantee that no empirical views on finance will bias his statements.

We learn that Col. Berton is by this time on his way to the Pacific Coast, and will arrive in a few days in Washington, where he is to collect all materials for his reports upon the monetary question in the United States. The high credentials of which he is the bearer will give him access to the high officials of the American Government, who will heartily co-operate with him in the accomplishment of his important duties.

The points, as summarised in the official instructions are—  
1.—The Monetary Question in the United States, and the means proposed to prepare for a resumption of specie payment at the period fixed by Act of Congress.  
2.—Statistics of the National Banks, and average issue of greenbacks and other paper moneys.  
3.—Administration of the United States Mint, and statistics of the coinage, and circulation of gold and silver.  
4.—The Production of Gold, Silver, and Quicksilver in the Pacific States, particularly in California and Nevada, and the present condition of the leading silver mines worked on the Great Comstock lode.  
5.—The Extent of the Californian Auriferous Land and Gravels.  
6.—Production, Domestic Consumption, and Export of the Precious Metals so far as the Union is concerned.

Col. Berton's official reports will form a valuable history of all facts connected with the causes of prosperity in the United States, together with the extraordinary mining resources of the Pacific Coast. Considered as such they will be of great service to European capitalists, and being widely circulated after their publication—in the "Journal Officiel" and the "Journal des Débats," for France; and in the "Mining Journal," for England—they will enlighten the scientific as well as the financial world upon the great questions which now so justly pre-occupy the English and French Governments.

#### THE EMMA MINE.

The investigation by a Committee of Congress at Washington of the circumstances connected with the formation of the Emma Mine Company will, it may be hoped, forever settle the question as to whether there was any fraud in the manner in which the subscriptions for the purchase of the property were obtained from British capitalists, and there can be no doubt that if anything of the nature of fraud be discovered those guilty of it will not be permitted to escape, whilst the anxiety which those involved to be at once examined upon the matters mentioned in a statement alleged to have been made before the Committee by James E. Lyon shows that there is no disposition on their part to stifle the enquiry. It is difficult to comprehend for what purpose the Committee admitted evidence as to the condition of the Emma Mine in October, 1875, as bearing upon an enquiry with reference to a matter which happened four years previously, nor has the question of the present condition of the mine, and the geological problem to be solved in the future, much to do with the matter unless it can be shown that no change has taken place in the meantime. The matter in dispute is whether the estimate made by Professor Silliman and others at the time the company was formed was fraudulent or simply erroneous, for upon this everything else turns.

But the most remarkable point for the moment is the alleged denial by James E. Lyon on March 1 of the statements attributed to him on Feb. 29. The telegraphic summary of Lyon's evidence, given on Feb. 29, and published in the *Times* of the following day, stated that he had deposed that there was correspondence between Paffard and General Schenck in July, 1873, about General Schenck's connection with the mine, which was read, concluding with the ap-

pointment by General Schenck of an interview with Paffard. The witness said Paffard had this interview. General Schenck told Paffard he did not know much of the witness, excepting that he was an adventurer. Paffard told General Schenck there were many concurrent circumstances inducing people to believe that money was given to General Schenck to float the stock, that a countryman of General Schenck's said General Schenck's fortune was too considerable to pay for shares. General Schenck told Paffard he had a Wisconsin coal mine on which he borrowed \$25,000 to pay off for half the stock. Other \$25,000 he borrowed from Park. He had not yet repaid Park all. The witness told Paffard there were no coal mines in Wisconsin. The witness afterwards visited Jay Cooke, McCulloch, and Co. He saw McCulloch, who asked him not to be severe on General Schenck, who got very indignant whenever the Emma Mine was mentioned, and told him that General Schenck denied ever calling the witness an adventurer.

Immediately upon the substance of this evidence being made known in London General Schenck denied the whole of Lyon's statement concerning him, and stated that having obtained leave of absence from his Government for that purpose he would sail in the next steamer for the United States to confront his calumniators and vindicate his reputation. Baron Grant was no less ready to refute Lyon's statement than General Schenck, and in denial of the evidence telegraphed to the Chairman of the committee:—

"Report of proceedings as to General Schenck's connection with the Emma Mine, published in to-day's London *Times*, states that James E. Lyon testified that I told him I gave Senator Stewart 2000 shares to become a director and to assist in getting Schenck's name on the board. This statement is absolutely untrue. I never saw Lyon, nor had any communication with him in my life. I never gave any shares either to become director himself or to get Schenck to be a director, and I give Lyon's testimony the most unqualified contradiction."

Now, the diametrically opposite character of the statements of Lyon and those he calumniates is obvious, and Baron Grant's telegram seems to have been a little too fast for him; for upon the President of the committee directing Lyon to read the telegram, he is said to have denied having made such statement. It is much to be regretted that so creditable a witness as James E. Lyon should have been so erroneously reported, as it is calculated to lessen the confidence to be placed in other statements of his; for it should be mentioned that the Associated Press telegram, the accuracy of which none would be disposed to doubt, distinctly stated that "Witness (Lyon) testified that Albert Grant, promoter of the Emma Mine speculation in England, informed him that he gave Senator Stewart 2000 shares to become a director himself and to assist in getting General Schenck's name on the board." If Lyon veracity to suppose that he did, seeing that no interview has ever taken place between him and Baron Grant—the other statements attributed to him with regard to alleged negotiations in 1871 and 1872 with regard to the Emma Mine, may fairly be questioned; so that it will probably be better to draw no conclusions from them until General Schenck and Senator Stewart have had an opportunity (a day two weeks hence having been fixed for the purpose) of interrogating him before the committee.

In connection with the present position and prospects of the Emma Mine, it may be interesting to state that Mr. B. A. M. Froiseth, United States Government Surveyor, of Salt Lake City, writes to us, under date Feb. 5—"I may be able to give your readers some important facts concerning the recent discoveries of large bodies of rich ores under the Emma Mine, developed by the City Tunnel Company, which fact will prove my former assertion made in the *Mining Journal* that the Emma is a mine of merit, but through want of deep workings, and proper management, has proved an elephant in the hands of the English stockholders."

**THE AMERICAN CENTENNIAL EXHIBITION.**—The collection of ores is likely to be one of the great attractions of the Exhibition. It includes a specimen of every important mine on the Pacific Slope, and of almost every known variety of valuable mineral, not little fragments, but huge pieces of 200 or 300 lbs. and more, showing gold, silver, cinnabar, sulphur, lead, and what-not, in all their forms and combinations. Here, among other interesting relics is the identical specimen by which the Emma Mine was sold to Messrs. Park and Stewart.

**COAL AND IRON IN THE UNITED STATES.**—A superior quality of hard coal has been discovered by Mr. J. J. Owens, on the eastern side of the St. Regis river, in Franklin county, in the State of New York. Mr. Owens has also discovered extensive beds of iron ore. The working of this newly discovered coal and iron would prove an incalculable benefit to the business interests of Northern New York. There has been no change in English canal coal at Boston. In Cumberland (Maryland) coal nothing of any consequence has been done upon the Boston market, and prices are nominally the same. Anthracite coal has been dull at Boston, and trade, both wholesale and retail, has been limited. The retail sales have been at \$7 to \$8 per ton, and for cargoes prices are nominal. It appears from official report that at the close of June, 1875, some 1315 miles of main line railroad in the State of Illinois were laid with steel.

**BLAKE'S STONE BREAKER.**—The business so long and successfully carried on at the Soho Foundry, Leeds, by the late Mr. E. J. Marsden, will still be conducted in the same name. Mrs. Marsden, the administratrix, having disposed of the foundry and business, together with the stock in trade, machinery, plant, and patents, to his son-in-law, Mr. Geo. Dalton, who having been educated as an engineer and long connected with the manufacturing department of Mr. Marsden's business, is in every way competent to give the same satisfaction to the customers of the foundry. It is gratifying to find that the name of H. R. Marsden will thus be kept alive.

**BOILER EXPLOSION.**—The Manchester Steam Users' Association (established by the late Sir W. Fairbairn, to prevent the sacrifice of human life from steam-boiler explosions) has published a statement showing that in the 10 years ended in 1874 there were 534 explosions, which killed 617 persons and injured 997 others; an average for each year of 53 explosions, killing 62 persons and injuring 99. The secretary of the Association (Mr. Tonge) writes—"This sacrifice of human life continues year after year. It is perfectly gratuitous. There is nothing in the nature of steam to cause it. It arises from the use in most cases of bad boilers, sometimes purchased second-hand, and put to use for which they are quite unfit, sometimes bought at so stingy a price that the maker cannot put in good material or good workmanship. In other cases it arises from working boilers till long after they are worn out and frequently so reduced that the plates are no thicker in places than of old pipe. The Association is desirous of promoting a searching investigation in the event of every explosion, so that the truth may be arrived at and published, instead of letting negligent steam get off under a verdict of 'Accidental death.'"

**ORE-ROASTING FURNACES.**—Two distinct furnaces have been invented by Mr. H. G. Livermore, of San Francisco. The first is an improvement in furnaces for roasting or desulphurising fine ores, which consists in a novel construction of a furnace having a grate placed at such an angle that the ore, if left to itself, would slide to the bottom. The space between this floor and the top is comparatively small, and is crossed by numerous dams or abutments, so that the ore will move and will only move when a portion is withdrawn from below, when the body of ore will move downwards, the dams serving to stir and turn the ore, so that the vapours can escape and a new surface will be exposed to the heat. The furnace is situated at the foot of the incline, and the heat passes over the body of ore and is deflected upon it. Suitable feeding and stirring passages for the escape of fumes to the condensers are made. The body of ore being so thin and so thoroughly exposed to the heat, will be roasted as fast as it can be fed and withdrawn at the bottom, the operation being continuous. The second patent is for a furnace more particularly adapted for quicksilver ores. It consists in the employment of two or more fireplaces upon the sides of the chamber, so placed that the heat will have its fullest effect upon the ore, and at the same time, the ore will be prevented from passing into or clogging the passages which branch out from the ore-stack or chimney and open into the chamber which extends entirely round the ore chamber, and collects the vapours in its readiness to deliver them to the condensers. By this construction the furnace is able to provide a continuous working furnace in which the greatest heat



have worked more satisfactorily than have similar apparatus in other parts of England. Latterly only five of the furnaces have been at work, along with eight old hand puddling furnaces; and it is said by those who ought to know that the expense of working was in every respect in favour of the Danks machine. Thus it is no failure of the Danks apparatus which has caused the temporary closing of the Ravensdale Works, for if Mr. Heath had had nothing but hand-puddling furnaces there the result would have been exactly the same. At Ravensdale the chief manufacture is that of plates, and there is no demand for that description of iron in North Staffordshire just now, so that it was useless keeping the establishment going. When trade revives the works will be re-opened. Mr. Heath and his manager (Mr. Fryer) have devoted considerable time and patience to perfecting the Danks machinery, and deserve to derive some profit out of their labours, which we have no doubt they will do when trade becomes more satisfactory.

The Delph Ironworks, late in the occupation of Chambers, Ellis, and Co., ironmasters, Brierley Hill, now in liquidation, were sold by auction by Mr. E. Cox, on Tuesday, at the Talbot Hotel, Stourbridge, to Mr. Parker, of Kingswinford, for the sum of 4890/.

**NEW JOINT-STOCK COMPANY.**—The firm of Hands and Co., electroplate and nickel silver manufacturers, of the Colonial Plate Works, Suffolk-street, Birmingham, has been converted into a joint-stock company, with a capital of 40,000*l.*, in 8000 shares of 5*l.* each. The cost of the works and stocks at the London and Glasgow warehouses is set down at 31,140*l.* The directors are Mr. Thos. Hands (Messrs. Hands and Son), Birmingham, managing director; Mr. John Dunn, coal and ironmaster, Netherton; Mr. John Elliott, Birmingham; Mr. George Hartshorne, Primrose Bridge Works, Netherton; and Mr. Elihu Price, merchant, Wolverhampton. The business has been successfully conducted by the firm for the past 28 years. The average net profits for the past three years, besides paying interest on additional capital employed, have been at the rate of over 10 per cent. per annum upon the vendor's capital (27,000*l.*) invested in the business, and with the increased capital to be provided by the company to make the proposed improvements and extensions the directors feel convinced that dividends of from 10 to 15 per cent. will be maintained.

BLAKELEY HALL COLLETRY COMPANY.—The case of *Plant v. the Trustees, Directors, &c.*, of this company, was heard in the Rolls Court on Thursday. Plant's legal right to proceed against the parties was disputed, but the Master of the Rolls decided in Plant's favour, dismissing the motion, costs on both sides to abide the result of the trial. At this stage it was stated that Plant had paid 11,000*l.* to Frazer, and 1000*l.* towards working capital, and that although other bondholders had received their quota of dividends, Plant had not received any. The learned judge suggested that Plant should have the refusal of the property for one month at a price which will, no doubt, enable him to get his money back, and a profit for his trouble. The minerals, it is acknowledged, are of the finest description and well proved, and the situation all that can be desired, being on the Birmingham Canal, about four miles from Birmingham. Pits sunk, engines erected, and all in working order. Coal is now selling at 18*s.* per ton.

REPORT FROM THE FOREST OF DEAN.

March 2.—Every day furnishes fresh evidence of the folly of attempting to run up prices by unnatural means; the rise of prices of coal in January, in order to give the men a percentage, simply drove off the merchants to cheaper markets, the consequence here being slack trade, and about half-time of work for the colliers. And this, with some slight variations, has been the state of things ever since. Indeed, just at present trade is comparatively at a stand still, notwithstanding that the men have submitted to a reduction of wages. In substance the merchants say, "You drove us away with our orders by forcing up prices, and now we will not return to you unless you come to our terms," which means less favourable ones to the proprietors. The work of winter has been looked for if matters had been allowed to run their natural course. The present state of things is the result of the suicidal policy just detailed, very cheerless; in fact, as the winter is going, and spring and summer are coming, we can scarcely count upon briskness in the coal trade, except as a mere spur before next fall.

We regret that the Iron Trade is such as to have induced the Messrs. Crawshaw to blow out one of their furnaces this week, and instead of selling at present prices they are stacking their pig-iron and have so stored about 1000 tons already. In connection with blowing out one of the furnaces, they have also discharged a number of their men, which has created a feeling of depression amongst the working classes. We are also, however, to receive more encouragingly respecting the operations of the Great Western Iron Company. They are still pushing forward and intend to increase their machinery and erect other furnaces. They are also adding to their mineral property, having just come into possession of another iron mine on the western side of the Forest. The Lydney Tin plate Works are now in a position to extend their manufacturing, and only wait an impetus of additional orders to induce such extension. There is little change beyond what we have already indicated, and, therefore, forbear to extend our remarks on this occasion, as other opportunities will arise. We are, however, to observe that we may just add that in connection with present reductions in wages coal is reduced to 18s. per ton, the pits to 11s. per ton; yet, strange to say, they charge residents from 1s. 6d. to 2s. 6d. per ton more than they do the merchants. Is that right?

### REPORT FROM DERBYSHIRE AND YORKSHIRE.

**March 2.**—Very little change has taken place during the week in the state either of the Coal or Iron Trades in Derbyshire. The business doing in pig has been very fair for some time past, and makers being able to offer on somewhat lower terms, have been able to secure orders in Staffordshire, as well as in other districts. The founders have been doing very well in pipes and general castings, whilst the Bessemer Works have been kept in full operation. The coal trade is very quiet, without much prospect of its mending, for now that we are getting into the season when fine weather may naturally be expected, there will be a marked decline in the consumption of house coal, so that prices, low as they now are, will have to come down still lower. The business doing with London is but moderate, and merchants, in consequence of the plethora, have been able to purchase on very favourable terms. Indeed, so that even consumers are able to buy at a price as low as 15s. per ton. Wages began to ascend at an astounding rate. Steam coal is much as it was a year, but now an improved demand is looked forward to, for the consumption is much larger during summer than any other period of the year.

Some branches of the Sheffield trade are very far from being brisk, and a good many men are still on short time. The heavy iron armour plate mills have been running very well, and a steady business is being done in ship and boiler plates. There is now more activity at the Bessemer establishments, and some large orders are in hand for rails of that material, as well as for forgings. Crucible steel has not much improved, but in some of the finer qualities of cutlery more is being done. The scissor-grinders have given notice that they require an increase in their wages, but in the present state of trade it is not likely to be conceded. The works at Attercliffe, Brightside, The Holmes, Masborough, &c., are, as a rule, doing very well, the foundries in particular being actively employed. Throughout the entire of the South Yorkshire district the coal trade is in a depressed state, and the question of a reduction of the miners' wages is now being seriously entertained. The Yorkshire Mining Association, of which Messrs. Thomas and James Mathley, one of the directors of the Shearlad Colliery, Derbyshire, principally owned by the South Yorkshire Mining Association, addressed meetings with a view to the colliers taking up shares so as to meet a call that will shortly be due. This is by no means assuring, as it is to be feared that the colliery not in a healthy state, at least as regards its capital.

One of the largest and most influential meetings of colliery owners which has taken place in the West Riding of Yorkshire for a considerable time past was held on Wednesday, at Barnsley, to take into consideration the tonnage rates and the recent advance made by the Great Northern Railway Company. Amongst those present were Mr. A. Chambers and Mr. Newton (Newton, Chambers, and Co., Thorncliffe); Mr. W. Crofts, Pinder Oaks; Mr. Butty, Pinder Oaks; Mr. G. W. Craik, Easewalker; Mr. Teasdale, Clarke's Old Silkstone Collieries; Mr. J. L. Ramsay, Thorpe Gawber Hall; Mr. H. Walker, Thorncliffe, Silkstone; Mr. J. Cleaves, Roundwood; Mr. J. C. Dunlop, Silkstone; Mr. R. M. Evans, The Holmes Colliery; Mr. J. C. Mitchell, Swatfield and Imund; Mr. M. C. Goss, Thimbleby ditto; Mr. J. Smallwood, Denaby Main; Mr. J. Blythe, Wombwell Main; Mr. Hackett, Locke and Co.'s Collieries; Mr. J. F. Thompson, Manor Main; Mr. R. O. Forsdick, Stratford Main; Mr. Ryecroft, Lund Hill; Mr. Gainsford, Birleside Collieries; Mr. Kell, Barrow Company's Colliery; Mr. Hemmings, Certon Wood; Mr. Willis, Newhill Colliery; Mr. Brownhill, Certon Wood; Mr. Seward, Stratford Road Main; Mr. James, The Oaks; Mr. Woolf, Bythorpe Colliery; Mr. Marshall, Hull; &c. &c. In the course of a somewhat lengthy discussion it was shown that the recent advance of 5d. per ton made by the Great Northern for coals from this district to London had had a most injurious effect on the trade, and it was held that the present depressed state of trade demanded a reduction rather than an advance. Ultimately it was agreed to forward a memorial to the directors of the Great Northern embodying the above facts, and calling the attention of the directors to the fact that the district collieryowners have no access to the London market with the North Eastern Railway, and that any advance has been charged to the West of England (freight from the North was much less than the rate charged from South Yorkshire). Similar memorials were also adopted and ordered to be forwarded to the Midland

To-day's quotations on the Birmingham Stock Exchange included the following:—Hamstead Colliery,  $\frac{1}{2}$  prem., buyers; West Cannock Colliery,  $\frac{1}{2}$  prem.; Cannock and Huntington Colliery, 2 prem. Sandwell Park Colliery, 28; John Bagnall and Sons (Limited),  $\frac{1}{2}$  Pelsall Coal and Iron, 5  $\frac{1}{2}$  d.; Dastart, Steel and Iron Co., 2 prem., 3 ditto 7 per cent debentures. The tone of the market for coal and iron companies' shares is decidedly easier on account of the improved condition of the trade.

In reference to the litigation which has arisen in connection with John Bagnall and Sons, we learn that Messrs. Bagnall have agreed to return to the shareholders the sum of 31,000*l.* out of the total amount claimed from the vendors and promoters of the company. This payment is made by Messrs. Bagnall on their own account only, and in settlement of the claim so far as it is made against them. The Chancery proceeding against the other parties concerned to recover the balance of the claim, are still being carried on by the shareholders' committee.

Another meeting of representatives of the South Staffordshire Iron Trade was held in Birmingham to-day (Thursday), at which the scheme for the new Wages Board was further discussed, and some progress made in the settlement of the details.

Owing to the death of Mr. Edward Russell the Cyclops Ironworks at Walsall have been closed, and 250 ironworkers have been thrown out of employment. The establishment is in the market for sale by private treaty.

From North Staffordshire there comes information that trade is very bad—not one whit better than it is in this portion of Staffordshire. The consequence is that Mr. Robert Heath, M.P., has stopped his Ravensdale Works, with the exception of the strip and hoop mills. At these works Mr. Heath had ten Danks furnaces, which

NORTHERN INSTITUTE OF MINING AND MECHANICAL ENGINEERS.







EDWARD HENRY RICKARDS, Deceased.

PURSUANT to an Act of Parliament, 22nd and 23rd Vict., cap. 35, intituled "An Act to further amend the Law of Property and to relieve Trustees," notice is hereby given, that ALL PERSONS having any CLAIMS or DEMANDS against the Estate of EDWARD HENRY RICKARDS, late of No. 29, Lincoln's Inn-fields, London, No. 4, Connaught-place, Hyde Park, late of Middlesex, and of Drayton House, West Drayton, in the same county, Esquire, Deceased, who died on the 13th day of January, 1876, and whose will and codicil were proved on the 3rd day of February, 1876, in the Principal Registry of the Probate Division of Her Majesty's High Court of Justice, by Arthur Rickards, son of the said Deceased (one of the Executors named in the said will), are hereby required to send particulars in writing of such claims or demands on or before the 31st day of March next, to the undersigned, Messrs. RICKARDS and WALKER, of No. 29, Lincoln's Inn-fields, London, Solicitors for the said Executor, who will then proceed to distribute the assets of the said Deceased among the parties entitled thereto, having regard only to the claims or demands of which they shall then have had notice, and the said Executor will not be liable for the assets, or any part thereof, so distributed to any person or persons of whose debts, claims, or demands they shall not then have had notice.

RICKARDS AND WALKER, 29, Lincoln's Inn-fields (Solicitors for the said Executor).

Dated this 11th day of February, 1876.

TO BROKERS.

THE PROPRIETORS of a VERY PROMISING CORNISH MINE wish to meet with a BROKER to ADVISE or ASSIST them in placing the NEEDED CAPITAL TO WORK IT. They will themselves form the company and find directors. The terms of transfer are unusually favourable to shareholders.

Address, "C. M.," care of Messrs. Duignan and Smiles, 15, Bedford-row, London, W.C.

COAL AGENCY WANTED.

AN ENERGETIC AGENT IN AMSTERDAM IS OPEN TO REPRESENT FOR HOLLAND one or several COAL MINES, or a RESPECTABLE HOUSE in the COAL TRADE. Good references.

Address, stating particulars, "N.," care of Mr. R. W. Hinse, Bookseller, No. 19, Geldsche Stradt, Amsterdam.

IN VOLUNTARY LIQUIDATION UNDER THE COMPANIES ACT, 1862. THE NEW LLANGYNOG LEAD MINING COMPANY (LIMITED).

TO BE SOLD, BY PRIVATE TREATY, ALL THE BENEFICIAL INTERESTS of the New Llangynog Lead Mining Company (Limited) in the LLANGYNOG LEAD MINES, comprising all the valuable, productive, and extensive mines, veins, beds of lead, and other metals and minerals known collectively as the Llangynog Lead Mines, and in the reservoir, water-supply rights, easements, and interests thereto belonging, situated in the several parishes of Llangynog, Llanrhaeadr-y-n-Mochnant, Hiranant, and Pennant, in the county of Montgomery; and also the WHOLE of the movable PLANT and MACHINERY of the said company.

The Llangynog Lead Mines have been a highly productive and dividend-paying property.

The mines, machinery, and plant are in working order, and considerable quantities of ore are now being raised.

The works may be inspected at any time upon application to the Manager at the Mines. The leases and agreements may be inspected at the offices of Messrs. LONGUEVILLE, JONES, and WILLIAMS, Solicitors, Oswestry.

All further information may be obtained, and maps of the property inspected on application to Messrs. GEO. HASWELL and BONS, 84, Foregate-street, Chester, or to Messrs. HENRY DENNIS, Esq., Mining Engineer, Hafod-y-Bwch, Ruabon; or to Messrs. LONGUEVILLE, JONES, and WILLIAMS, Solicitors, Oswestry.

EXTENSIVE MINING PROPERTIES.

TO BE SOLD, IN PRIVATE (on account of the present owner being in delicate health), AN EXTENSIVE IRON ORE ROYALTY, situated at PRIZINGTON, in the county of CUMBERLAND, extending over about 212 acres. Five shafts are already sunk, and in working order, with engine power, and all necessary mining plant, and railway sidings to all the pits, in good working order.

There is also a COAL PIT on the same royalty, sunk 75 fathoms, and a new BRICKWORK with engine, and all other Mining Plant, complete.

AN EXTENSIVE COPPER MINE in SHROPSHIRE, extending over about 30 acres, with powerful engine, water-wheel and engine, washing apparatus for sorting the copper, and other MINING PLANT; also THREE COTTAGES and blacksmiths' shop.

AN EXTENSIVE LEAD MINE, the "RENNIE LAXEY," in the ISLE OF MAN, extending over about 400 acres, with water-wheel, pumps and machinery all complete.

For full particulars of all the mines, apply to the owner, Mr. JOSEPH FEARON, Cockleick, Whitehaven.

THE HENDON SHELTER WORKS.

TO CAPITALISTS, PROMOTERS OF PUBLIC COMPANIES, & OTHERS.

FOR SALE, in consequence of the Death of the late Sir Partner, John Candlish, M.P., the SHELTER WORKS, situated at Hendon, in the borough of St. Andrew, in the county of Durham, carried on under the style of "THE HENDON SHELTER COMPANY."

The works are situated within one mile of the well-known docks of the port of Sunderland, and adjoining the Hartlepool Branch of the North Eastern Railway, with which they are connected by high and low level sidings, and thereby placed in communication with all parts of the United Kingdom. Their position, within easy distance of both the ports of Newcastle and Sunderland, is very advantageous for the cheap importation of raw material, as also the forwarding of the manufactured article either by land or sea.

The ground on which the works are built can be either bought out or bought on a yearly perpetual ground rent, and any quantity under 20 acres can be included in the sale.

Being situated in the midst of the Durham Coal Field fuel of the best description can be obtained at a cost below almost any other part of the United Kingdom. There are 19 workmen's cottages, which can be bought with the works. The works contain 24 large furnaces, capable of producing 70 tons of metal a week, as also calenders, potlows, machinery, blacksmiths' and joiners' shops, &c., of sufficient capacity for a much larger number. The works can, therefore, be doubled at a comparatively small cost.

The quality of the metal made at these works is well known, and it, therefore, commands a ready sale at the highest prices.

Attached to the high level sidings are large depots for coal, ore, &c.

The goodwill would, of course, go with the works, and they will be sold subject to all stock being taken at a fair market value.

The purchaser can also have the option of buying the CALCINING WORKS and VALUABLE MINES in SPAIN, thus allowing of the economical and regular supply of the raw material, and saving the mineowners' and merchants' profits.

As the ore from the South of Spain generally comes as ballast for ships laden with export, it has been brought for this company at an average cost of 7s. per ton, sometimes as low as 4s. 6d.

Further particulars can be had on application to the company.

VALUABLE MINE MACHINERY FOR SALE, BY TENDER—viz.:

ONE 25 in. cylinder ROTARY ENGINE, 9 ft. stroke, equal beam, and ONE 10 ton BOILER.

ONE IRON STAMPS AXLE, 15 heads, iron lifters, &c.

The above materials are nearly new, having been worked only a few months.

Also, ONE WATER WHEEL, iron axle and iron ring, 20 feet diameter, 2 feet beat (in capital condition), with 6 fathoms of 8 inch iron pipes.

For particulars, apply to Mr. RICHARD CLOGG, Liskeard, to whom the tenders should be sent not later than the 10th day of March instant.

In order to wind-up a concern quickly it will be preferred to sell all the above materials in One Lot for which tenders are invited.

But separate tenders, divided into Three Lots—No. 1, Engine and Boiler; No. 2, Stamp, &c.; No. 3, Wheel and Water Pipes—will be received.

The tenders do not bind themselves to receive the highest or any other tender.

Dated Liskeard, 1st March, 1876.

FOR SALE, a splendid 40-ft. WATER WHEEL, 4 ft. breast, with double-gear DRAWING MACHINE, balance bob and connection, all complete.

For particulars address, Messrs. J. TAYLOR and Co., 86, London Wall, E.C.

FOR SALE:—

ONE 60 ft. OVERSHOT WATER WHEEL, 2 ft. 6 in. breast, iron rings, centre piece, shaft, wooden arms, buckets, backing.

ONE 12 ft. by 2 ft. 6 in. ditto ditto

ONE 12 head SET OF STAMPS, complete.

ONE LARGE PUMP CRANK, with four pin holes.

ONE 13 ft. IRON BOB.

EIGHT LARGE GEAR WHEELS.

ONE 8 ft. revolving fan false bottom MORTAR MILL.

A lot of PUMP RODS, JOINTS, TRAM WAGONS, PUMPS, &c., &c.

The whole of the above has been little used; is in good condition; will be sold cheap, together or separate.

PORTABLE ENGINES, PUMPS, SAW TABLES, always on sale or hire.

Apply to—

POLYBLANK AND CO.,

ENGINEERS AND BOILER MAKERS, NEWTON ABBOT AND DARTMOUTH.

FOR SALE, a 35-horse power PORTABLE STEAM ENGINE, with link motion reversing gear, ready for delivery.

An 18 horse power VERTICAL STEAM ENGINE, with link motion reversing gear, also gear to wind a pump.

A 9 ft. PAN MORTAR MILL, VERTICAL ENGINE, and BOILER.

Apply to—

BARROWS AND STEWART, ENGINEERS, BANBURY.

CONDENSING AND NON-CONDENSING HORIZONTAL PUMP ENGINES, of the highest class, at low prices.

ENGINEERS' TOOLS of all kinds, unrivalled for arrangement and general usefulness, at low prices. Inspection invited.

POLLOCK AND MACNAB, BRITANNIA IRONWORKS, HYDE, NEAR MANCHESTER.

In the Court of the Vice-Warden of the Stannaries, Stannaries of Cornwall.

IN THE MATTER OF THE COMPANIES ACTS, 1862, and of the EAST TRUMPET MINING COMPANY.—Notice is hereby given, that ALL CREDITORS of the above-named company are required, on or before the 11th day of March inst., to SEND IN their NAMES and ADDRESSES, and the AMOUNTS and PARTICULARS of their several CLAIMS, to JOHN HENRY HAMLEY, the Official Liquidator of the said Company, at the Stannaries Court Office, in Truro, within the said Stannaries.

FREDERICK MARSHALL, Registrar.

Dated Registrar's Office, Truro, March 1, 1876.

In the Court of the Vice-Warden of the Stannaries, Stannaries of Cornwall.

IN THE MATTER OF THE COMPANIES ACT, 1862, and of the EAST TRUMPET MINING COMPANY.—The Vice-Warden has, by an Order made in the above Matter, bearing date the 29th day of February last, APPOINTED JOHN HENRY HAMLEY, of Truro, within the said Stannaries, an Officer of the said Court, to be the OFFICIAL LIQUIDATOR of the above-named company.

FREDERICK MARSHALL, Registrar.

Dated Registrar's Office, Truro, March 1, 1876.

In the Court of the Vice-Warden of the Stannaries, Stannaries of Cornwall.

IN THE MATTER OF THE COMPANIES ACTS, 1862, and of the NORTH ROSEWARNE MINING COMPANY.—ALL CREDITORS or CLAIMANTS of the above-named company, who have not received notice from the Official Liquidator thereof that their claims have been already admitted, are hereby required to COME IN and PROVE their several DEBTS or CLAIMS at the Registrar's Office, Truro, on Monday, the 13th day of March inst., at Eleven o'clock in the forenoon; or, in default thereof, they will be EXCLUDED from the BENEFIT of any DISTRIBUTION made before such proof. And for the purpose of such proof they are to attend in person, or by their solicitors or competent agents, at the time and place above mentioned.

FREDERICK MARSHALL, Registrar.

Dated Registrar's Office, Truro, the 1st day of March, 1876.

In the Court of the Vice-Warden of the Stannaries, Stannaries of Cornwall.

IN THE MATTER OF THE COMPANIES ACT, 1862, and of the CRANE MINING COMPANY.—By direction of His Honor, the Vice-Warden, notice is hereby given, that on Wednesday, the 15th day of March next, at Eleven o'clock in the forenoon, at the Registrar's Office, at Truro, in the county of Cornwall, this Court will proceed to MAKE A CALL of ONE POUND TWO SHILLINGS AND SIXPENCE PER SHARE on all the contributories of the said company settled on the List of Contributories thereof as present members.

All persons interested therein are entitled to attend at the time and place above said to offer objections to such call.

JOHN HENRY HAMLEY, Official Liquidator.

Dated Stannaries Court Office, Truro, the 29th day of February, 1876.

In the Court of the Vice-Warden of the Stannaries, Stannaries of Cornwall.

IN THE MATTER OF THE COMPANIES ACT, 1862, and of the PERRAN WHEAL VIRGIN MINING COMPANY.—By the direction of His Honor, the Vice-Warden, notice is hereby given, that on the 16th day of March next, at the Registrar's Office, at Truro, in the county of Cornwall, at Eleven o'clock in the forenoon, this Court will proceed to MAKE A CALL of TEN SHILLINGS PER SHARE on all the contributories of the said company settled on the List of Contributories as present members thereof.

All persons interested therein are entitled to attend at the time and place above said to offer objections to such call.

CHARLES WILLIAM CLINTON, Official Liquidator.

Dated Stannaries Court Office, Truro, the 28th day of February, 1876.

In the Court of the Vice-Warden of the Stannaries, Stannaries of Cornwall.

IN THE MATTER OF THE COMPANIES ACT, 1862, and of the PARBOLA MINING COMPANY (LIMITED).—By the direction of His Honor, the Vice-Warden, Notice is hereby given, that on Friday, the 17th day of March instant, at Eleven o'clock in the forenoon, at the Registrar's Office, at Truro, in the county of Cornwall, this Court will proceed to MAKE A CALL to the extent of the remaining UNCALLED CAPITAL of the said company on all the contributories of the said company, settled on the List of Contributories thereof as present members.

All persons interested therein are entitled to attend at the time and place above said, to offer objections to such call.

CHARLES WILLIAM CLINTON, Official Liquidator.

Dated Stannaries Court Office, Truro, the 1st day of March, 1876.

In the Court of the Vice-Warden of the Stannaries, Stannaries of Cornwall.

IN THE MATTER OF THE COMPANIES ACT, 1862, and of the ROSEWARNE UNITED MINING COMPANY.—Notice is hereby given, that a PETITION for the WINDING-UP of the above-named company by the Court was, on the 29th day of February last, presented to the Vice-Warden of the Stannaries by William Harvey, Henry Whitford, William West, William John Rawlings, William Husband, Francis Harvey, and Nicholas James West (carrying on business at Hayle, within the said Stannaries, as General Merchants, under the style or firm of "Harvey and Co."), shareholders, and claiming to be creditors of the said company, and that the said petition is directed to be heard before the Vice-Warden, at the Law Institution, Chancery-lane, London, on Monday, the 29th day of March instant, at a quarter before Eleven o'clock in the forenoon.

Any contributory or creditor of the company may appear at the hearing and oppose the same, provided he has given at least two clear days' notice to the petitioners, their solicitors, or their agents, of his intention to do so, such notice to be forthwith forwarded to P. P. Smith, Esq., Secretary of the Vice-Warden, Truro.

Every such contributory or creditor is entitled to a copy of the petition and affidavit verifying the same from the petitioners, their solicitors, or their agents, within 24 hours after receiving the same, on payment of the regulated charge per folio.

Affidavits intended to be used at the hearing, in opposition to the petition, must be filed at the Registrar's Office, Truro, on or before the 16th day of March inst., and notice thereof must at the same time be given to the petitioners, their solicitors, or their agents.

HODGE, HOCKIN, AND MARRACK, Truro, Cornwall.

(Agents for Gregory, Rowell, and Rawle, 1, Bedford row, London, Agents of the said Solicitors.)

Dated Truro, March 2, 1876.

In the Court of the Vice-Warden of the Stannaries, Stannaries of Cornwall.

IN THE MATTER OF THE COMPANIES ACTS, 1862 and 1867, and of the ST. JUST AMALGAMATED MINING COMPANY (LIMITED).—TO BE SOLD BY AUCTION, under the direction of the Registrar of the said Court, on Tuesday, the 14th day of March next, at Twelve o'clock at noon, at the St. Just Amalgamated Mines, in the parish of St. Just in Penwith, within the said Stannaries (subject to such conditions as shall be then and there produced), all that the INTEREST of the said company, of and in the SEVERAL SETS of works which its mining operations have been carried on, together with the WHOLE of the undermentioned

MINING PLANT, MACHINERY, MATERIALS, AND EFFECTS, viz.:

40 in. cylinder ENGINE, 9 ft. stroke in the cylinder, and 7 ft. in the shaft, and a 10 ton BOILER.

36 in. cylinder PUMPING ENGINE, 9 ft. stroke, equal beam, and THREE 10 ton BOILERS.

26 in. cylinder ROTARY ENGINE, used for stamping and winding, and a 10 ton BOILER.

24 in. cylinder WINDING ENGINE, with cage, &c., complete, 8 ton BOILER.

29 fms. 10 in. plunger lift, 14 fms. 10 in. ditto, 30 fms. 9 in. ditto, 74 fms. 6 in. ditto, 32 fms. 5 1/2 in. ditto, 25 fms. 4 1/2 in. ditto, several 4 in. and 5 in. in plunger and drawing lifts, four 16 heads stamps axles, with iron lifters, heads, frames, &c., complete; cast iron bob, shaft and other bobs, 7 in. and 6 in. main rods, weigh bridge (by Bartlett and Son), to weigh 6 tons, 400 fms. of 3/4 in. and 9-16 in. chain, other chain, 260 fms. 3/4 in. wire rope, several tons of bridge and other rails, kibble, iron skips, iron and other tram wagons, horse whips, several shaft tackles and landing braces, pulleys and stands, double and single crab winches, one 15 ft. water wheel 16 in. breast, one 10 ft. ditto 20 in. breast, one 8 ft. ditto 12 in. breast, one 5 ft. ditto 12 in. breast, wood houses, Boraes' buggies and other buggies, kieves, tin chests, hand frames, clevers, iron tube, draw screw, two 40 in. smiths' bellows, anvils, a large quantity of smith and miners' tools, a quantity of cast steel borer and other steel, several tons of new and old iron, crane, taps and plates, double and single blocks, launders, iron stove and other ladders, miners' dial, cable, scales and weights, assaying tools, wire knocker lines, a large quantity of brass, lifting jack, three dozen patent picks, sheet lead, boring machine, shovels, a large quantity of useful timber, the account house furniture, and other effects in general use in mines.

For leave to inspect the above, apply to the Agent in charge of the mines, or to Mr. FRED. WARWICK, the Official Liquidator of the said company, at No. 25, Bucklersbury, London.

Dated Stannaries Court Office, Truro, this 29th day of February, 1876.

HODGE, HOCKIN, AND MARRACK, Solicitors, Truro.

(Agents for Alexander Kerly, 14, Great Winchester-street, London, Solicitor for the said Official Liquidator.)

TO CAPITALISTS OR PROMOTERS DESIRING TO MAKE MONEY.

TO BE SOLD, a COLLIERY ROYALTY IN NORTH WALES, close to rail or shipping port; several shafts partially sunk; coal fully proved of FOUR SEAMS of good HOUSE and STEAM COALS, in an area of upwards of 400 acres of surface. It adjoins the West Mostyn Coal Field, just successfully launched, where under seams (including Cannel) have been proved in addition to the above; so that eminent engineers state that the available coal in this royalty may be 55 feet thick.

Present holder will arrange to sell the entire to an individual or company for what it has cost him, dividing all profit made above, which, even in a normal state of the coal trade, must be large. Certain and safe surveys by eminent Staffordshire and Welsh engineers have already been taken.

Address, "N. D. Desperandum," care of Mr. Watson, 15, Fenwick-street, Liverpool.

PENPOLL TIN SMELTING WORKS, POINT, NEAR TRURO, CORNWALL.

TO TIN SMELTERS, MANURE MERCHANTS, MINE AGENTS, IRON FOUNDERS, AND OTHERS.

MR. R. JOHN is instructed by the proprietors to SELL, BY AUCTION, at the above works, subject to such conditions as shall be then produced, on Tuesday, the 14th day of March next, at Three o'clock in the afternoon, in One Lot, as a going concern, the whole of the above

VALUABLE PROPERTY.

With the MACHINERY, WORKING PLANT, and other EFFECTS belonging thereto, all being in a high state of preservation, viz.:

ONE 12 in. HORIZONTAL ENGINE, fitted with governor and feed pump, 7 ft. fly-wheel (turned), supplied by Williams and Co., Ferran Foundry.

6 ton BOILER, fitted with two safety valves.

Steam and water gauge and steam pipes, fire doors and bars, one 18 in. crusher, driving gear and raff wheel, 4 head stamps axle, with frames, passes, and stripes complete, one 3-head ditto, steam hoist, tramroad and iron wagon, jigger, buggies and stripes, four large iron smelting kettles, one small refining ditto, two furnaces, 42 large cast-iron tin moulds, 73 small ditto, nine marble bar tin moulds, iron cranes, blocks and chains, four large beams and scales, iron weights, a complete set of brass weights (from 5 lb. to 1 lb.), trucks, wheelbarrows and handbarrows, iron tin barrow and trucks, tin hutchies, tin bags, several thousand of new and second-hand fire bricks, several tons of new and old iron, tinstuff, and a numerous lot of smelters' tools; 40 in. smiths' bellows, anvil, vice, and smiths' tools, assayers' scales and weights, sampling irons, brass mortars, small iron kettles, sampling trays, &c.; wood shed, about 160 fms. 6 in. iron pipe, wood rail around coal yard, a large quantity of timber and other articles, &c.

The premises are held for the remainder of a term of 21 years, of which 14 are unexpired, from Michaelmas next, and a constant supply of water is brought into the works.

The situation of the property is most convenient for shipping, being close to Devoran river, and in immediate proximity to Falmouth Harbour, and offers to capitalists and others a rare opportunity of carrying on an extensive and lucrative business.

The Auctioneer begs to call the particular attention of tin smelters and others to the above, the whole being entirely new within the last few years.

To view, apply to Mr. JOHN LANGDON, on the premises; and for further particulars to the Auctioneer: or to Messrs. HODGE, HOCKIN, AND MARRACK, Solicitors, Truro.

Dated Truro, 22nd February, 1876.

CARNARVON COLLIERY.

TO BE SOLD, BY PUBLIC AUCTION (by Order of the Mortgagees), by Mr. F. G. GOUGH, at the Stepney Arms Hotel, Llanelli, in the county of Carmarthen, in One Lot, on Thursday, the 30th of March, 1876, at Four o'clock in the afternoon (subject to such conditions of sale as will be then and there produced), all that LEASEHOLD PROPERTY known by the name of THE CARNARVON COLLIERY, Situate in the parish of Llanelli, in the county of Carmarthen. The coal produced is that known as "Bituminous," and of excellent quality, and is much used at the numerous works in the neighbourhood.

There is a siding from the colliery into the Llanelli and Llandoil Railway, communicating directly thereby with the Port of Llanelli and the Great Western Railway, each of which is distant from the colliery about two miles only.

The above property is held under two agreements or terms for the terms of 60 years, from the 30th day of June, 1872, and the 29th day of September, 1872, respectively, and a lease from year to year at sleeping rents, amounting together to £155 per annum.

The royalty on the coal and culm under the said agreements is 9d. per ton, and 4d. per ton on fire-clay, and the royalty on coal and culm under the said lease is 10d. per ton, and the royalty on ironstone under a part of the property is 9d. per ton.

The lands comprised in the said agreements consist of about 124 acres, and all the minerals lying thereunder are included in the lettings. The lands comprised in the said lease consist of about 29 acres, and the coal and culm thereby demised consist of the Penbryn or Little Vein.

Particulars and conditions of the sale can be had gratis on application to the Auctioneer, Murray-street, Llanelli: Mr. ROBERT JOHNSON, Solicitor, Hall street, Llanelli; Messrs. LINKLATER and Co., Solicitors, 7, Walbrook, London, E.C.; or to Messrs. SPEECHLY and Co., Solicitors, 1, New Inn, Strand, London, W.C. Llanelli, February, 1876.

ROBERT JOHNSON, Hall-street, Llanelli.

NOTICE.

SALE, BY AUCTION, OF THE MINE OF AGORDO, IN ITALY.

NOTICE IS HEREBY GIVEN, that on the 10th of May, 1876, a SECOND SALE, BY AUCTION, will take place in Italy, at the Intendenza di Finanza, in the City of Belluno, for the Definitive Adjudication in favour of the HIGHER BIDDER of the COPPER MINE OF AGORDO, belonging to the State Domain, including the following property, in One Lot, only:—

1st.—The buildings and other properties for the use of the administration of the mine, the forges and smelting apparatus.....Italian lire 200,000-00

2nd.—The property independent of the works of the establishment....." 30,000-00

3rd.—The woods and timber appertaining to the establishment, in round figures.....200,000-00

4th.—The value of the mine.....100,000-00

5th.—The value of the moveables.....25,643-56

Total upset price.....Italian lire 555,643-56

The important modifications made since January, 1875, in purifying the ore have produced many improvements, which, in the actual condition of the works, represent a yearly profit of 80,000 lire, besides which, these improvements do away with the necessity of using the dry method, and consequently no coals will be required for the future.

No offer to be made of less than 500 Italian lire over the fixed sum of 555,643-56, at which the sale will be opened.

The sale will be effected by auction, and the adjudication will be made, even should there be but one bidder.

All information respecting the conditions of sale, the mode of payment, and other particulars, as from the Cahier des Charges, may be seen at the Italian Consulate General, 31, Old Jewry, E.C.

J. B. HEATH, Italian Consul General.

London, 25th February, 1876.

IRONWORKS.

FOR SALE, in Belgium, BY PUBLIC AUCTION, and at once sitting, the IMPORTANT IRONWORKS of MONTIGNY-SUR-SAMBRE, comprising BLAST FURNACES, COKE OVENS, ROLLING MILLS, and all PLANT and MACHINERY; also MANAGER'S RESIDENCE and PRIVATE GROUNDS, the whole of an area of about TWENTY-FIVE ACRES, connected with the main railway line, and having a river frontage.

The RIGHTS of certain MINING CONCESSIONS will form part of the sale, which will take place publicly at the Bourse in the Town Hall of Charleroi, on Monday, 20th March, at 3-30 p.m.

For further particulars, apply to Mr. CORNIL, Votaire, at Charleroi, entrusted with the sale; or to Mr. CHARLES KIMPS, at the Works, Montigny-sur-Sambre.

SHARES IN A CELEBRATED MINING PROPERTY IN CHILI, YIELDING LARGE PROFITS, FOR SALE.

TO BE SOLD, BY AUCTION, at the Mart. Tokenhouse-yard, in the City of London, on Tuesday, the 23rd day of May, 1876, at Two o'clock precisely, by Messrs. DRIVER, in One or more Lots,

THREE SHARES (in Chili designated Barras) in the CARRIZALILLO MINING COMPANY. The company is divided into 24 shares only.

THE CARRIZALILLO COMPANY own the celebrated DESCUBRIDORA MINE, and the three adjoining sets of SAN JUAN, CANCHAS, and SAN FRANCISCO, which are all worked under one administration, and are situate about thirty-three miles from the Port of Pan de Azucar, from whence there is a good road.

The DESCUBRIDORA MINE has been working since 1859, and has yielded large profits. There are two steam-engines at work, one of 20-horse power and one of 8-horse power, for drawing, and there is also a newly-erected powerful engine, with Blake's crusher attached; by the use of the latter the company is enabled to dress and return the large accumulation of low-produce ore, which will now give a considerable profit. The mine is in thorough working order, and well stocked with materials, rails, jiggers, crushers, &c.

The adjoining sets of SAN JUAN, CANCHAS, and SAN FRANCISCO were acquired for the purpose of securing the ground around the Descubridora Mine, and they have since been worked on a limited scale. There is also a shop, which supplies the workpeople, and also houses, carts, and mules.

Also the VEGA WASHING AND JIGGING ESTABLISHMENT, with yards, houses, shop, and stores, about nine miles from Descubridora (a tramroad is being laid down from the mine, which will greatly lessen the costs of carriage to the Vega). There are also dwelling-houses, bake-house, yards, store-rooms, ore floors, and mole at Pan de Azucar, with convenient launches for use in loading ships with the ore; and there is also belonging to the company a quinchico establishment, a watering place, situate about eight miles from Pan de Azucar, on the road to Descubridora, with dwelling house, shop, store, mule yard, water carts, mules, and harness; and in Chanaral Port a dwelling-house of eight rooms, and spacious balcony and store below, with good counting house.

The company also have at Chanaral other houses and sites, and also a complete condensing apparatus, with four boilers, &c.

Two-thirds of Descubridora, San Juan, Canchas, and San Francisco, with some other property of comparatively small value, were sold in 1872 for the aggregate sum of £20,000, and since then profits have been divided much more than sufficient to repay the purchase-money, and there is every prospect of Descubridora continuing to give large profits for a considerable time.

Printed conditions of sale will be shortly ready, and further particulars can be obtained in Chili from ROBERT PEEBLES, Esq., Chanaral, Chili; and in England from Messrs. DRIVER, the Auctioneers, Whitehall, London; or of S. T. G. DOWNING, Solicitor, Redruth, Cornwall.

VALUABLE LEAD MINING PROPERTY.

TO BE SOLD, the LEASE and PLANT of a VALUABLE LEAD MINE, situate in one of the richest lead districts in England, and surrounded by some of the best dividend paying mines.

For particulars, apply to "W. X.," at the MINING JOURNAL Office, 26, Fleet-street, London.

SULPHATE OF BARYTES FOR SALE.—Fine powder, beautifully white; also in the Rock or Crude State, free from Lime and Metallic Oxide.

Samples on application to—

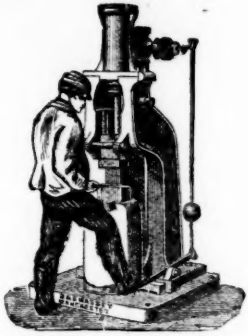
RUTHWAITE BARYTES MINING COMPANY, Nov. 17, 1875. WHITEHAVEN.



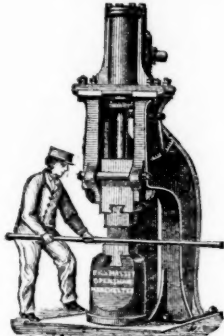
# B. & S. MASSEY, OPENSHAW, MANCHESTER.

PRIZE MEDALS Awarded:—Paris, 1867; Havre, 1868; Highland Society, 1870; Liverpool, 1871; Moscow, 1872; Vienna, 1873; Scientific Industry Society, 1875, Leeds, 1875; Paris, 1875.

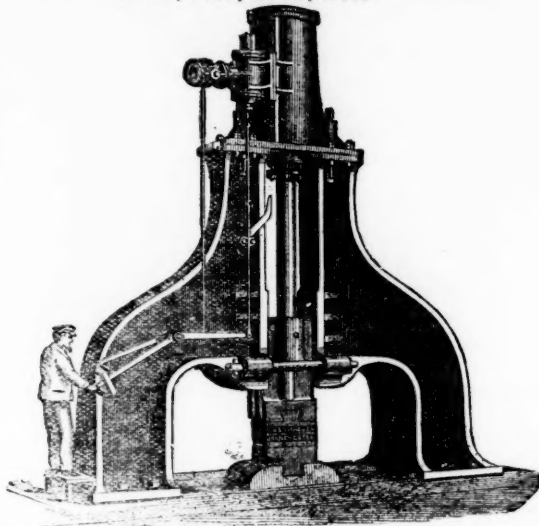
Patentees and Makers of Double and Single-acting STEAM HAMMERS of all sizes, from  $\frac{1}{2}$  cwt. to 20 tons, with self-acting or hand motions, in either case giving a perfectly DEAD BLOW, while the former may be worked by hand when desired. Large Hammers, with Improved Framing, in Cast or Wrought Iron. Small Hammers, working up to 500 blows per minute, in some cases being worked by the Foot of the Smith, and not requiring any separate Driver.



Small Hammer with Foot Motion.



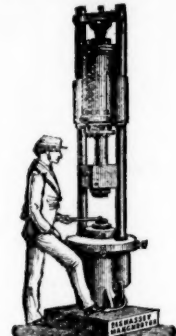
General Smithy Hammer.



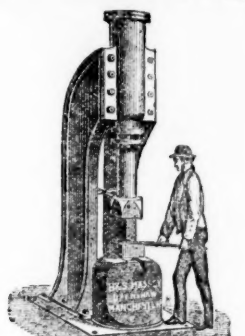
Steam Hammer for Heavy Forging.

SPECIAL STEAM STAMPS, for Forging, Stamping, Punching, Bolt-making, &c.

STEAM HAMMERS for Engineers, Machinists, Ship-builders, Steel Tilters, Millwrights, Copper-smiths, Railway Carriage and Wagon Builders, Colliery Proprietors, Ship Smiths, Bolt Makers, Cutlers, File Makers, Spindle and Flyer Makers, Spade Makers, Locomotive and other Wheel Makers, &c.; also for Use in Repairing Smithies of Mills and Works of all kinds for straightening Bars, bending Cranks, breaking Pig-iron, &c.



Special Steam Stamp.



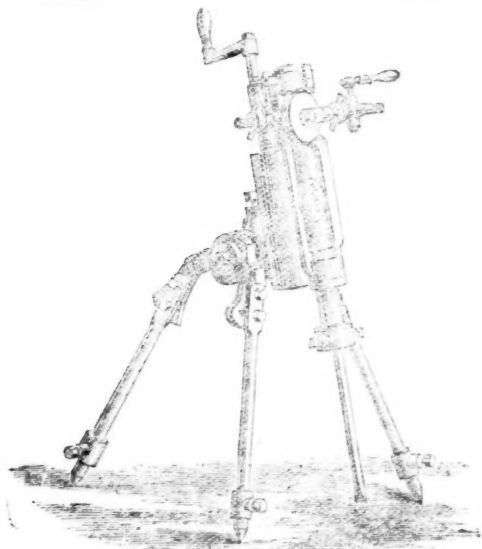
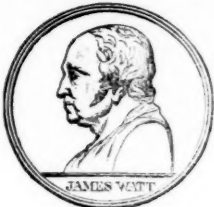
General Smithy Hammer.

From 60 to 100 Steam Hammers and Steam Stamps may usually be seen in construction at the Works.

## THE LEVET ROCK DRILL,

UNDOUBTEDLY

The Simplest and Most Efficient in the World.



THIS DRILL WILL BORE THE HARDEST GRANITE with great rapidity, without getting out of order.

It is the CHEAPEST and MOST PROFITABLE MACHINE for SINKING, MINING, and QUARRYING. It is preferred and adopted (after trials) by owners and managers of mines both in England and abroad.

For particulars, and Prices of Rock Drills, Air Compressors, Coal Cutters, Steam Pumps, and all other Mining Machinery, apply to—

**CHAS. HARWOOD AND CO.,**  
ST. STEPHEN'S CHAMBERS,  
TELEGRAPH STREET, MOORGATE STREET, LONDON, E.C.

SEND FOR LISTS, SHOWING EXTRA LARGE DISCOUNTS FOR CASH.

**HOWARD RYLAND AND CO.,**  
MANUFACTURERS,

105 AND 106, NEWHALL STREET, BIRMINGHAM,  
CLOTH AND MANILLA CARTRIDGE

**DIRECTION LABELS.**  
SELFINKING ENDORSING STAMPS.

DOOR AND WINDOW PLATES of Brass, Zinc, and of Plate Glass.

Letter Copying Presses, Eveletting Presses, Embossing Presses, Stamps for Election Purposes, Dating Stamps, Key and Umbrella Labels, Wine Merchants and Chemists' Wax Seals, Sealing and Bottling Wax, Glue, Post Boxes for Jewellers and others, Brass Clocks for large Works, Concert Halls, Hotel Keepers, &c. Brass Labels for Patentees, Gummed Tickets for Drapers, Gummed Labels, &c. Printing, Letter Cutting, Die Sinking, Engraving, Wood Engraving, Stereo Typing, Bookbinding, executed at exceedingly low prices.

Birmingham Goods of every description supplied at low prices for cash only. Endorsing Inks supplied, Old Stamps repaired, Door and Window Plates re-engraved, and made as new.

### SPECIAL NOTICE.

H. R. and Co. are now supplying DIRECTION LABELS, subject to 30 per cent. discount off List Prices.

ENDORSING STAMPS, No. 3, at 3s. 9d. each, and ENGRAVING at 1s. 3d. per dozen letters; usual price, 7s. 6d.; and ENGRAVING 2s. 6d. per dozen letters.

FLEXIBLE PRINTING STAMPS at less than half the List Price. Key and Umbrella Labels at 6d. each, engraved.

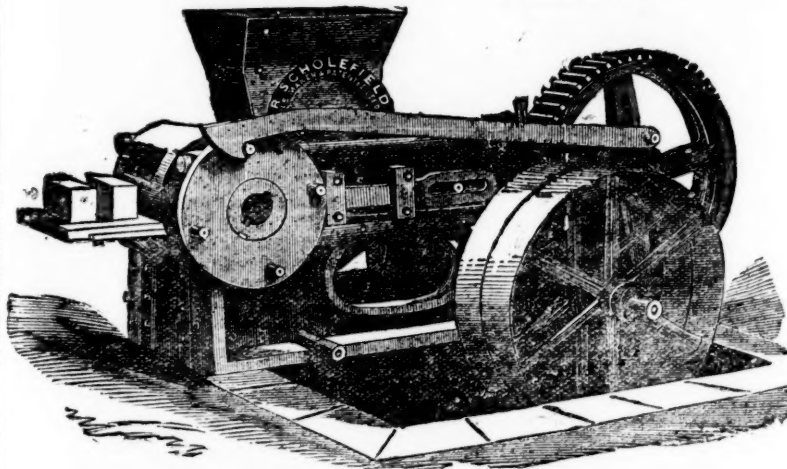
DOOR and WINDOW PLATES, at very low prices.

AGENTS WANTED.

**THE NEWCASTLE DAILY CHRONICLE**  
(ESTABLISHED 1784.)  
THE DAILY CHRONICLE AND NORTHERN COUNTIES ADVERTISER  
Office, Westgate-road, Newcastle-upon-Tyne; 50, Howard street, North Shields; 195, High-street, Sunderland.

## R. SCHOLEFIELD'S LATEST PATENT BRICK-MAKING MACHINE.

PATENTED 1873.



production, and the hands required to make 10,000 pressed bricks per day:—

|  |        |
|--|--------|
| 2 men digging, each 4s. per day .....  | £0 8 0 |
| 1 man grinding, 4s. 6d. per day .....  | 0 4 6  |
| 1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day ..... | 0 2 0  |
| 1 boy greasing, 1s. 6d. per day .....  | 0 1 6  |
| 1 engine-man, 5s. per day .....  | 0 5 0  |
| 1 man wheeling bricks from machine to kiln, 4s. per day .....  | 0 4 0  |

Total cost of making 10,000 pressed bricks .....

(SETTING AND BURNING SAME PRICE AS HAND-MADE BRICKS.)

N.B.—Where the material can be used as it comes from the pit, the cost will be reduced in digging. As the above Machinery is particularly adapted for the using up of shale, bind, &c., it will be to the advantage of all Colliery Owners to adopt the use of the said Brick-making Machinery.

THE MACHINES CAN BE SEEN IN OPERATION AT THE WORKS OF THE SOLE MAKER AND PATENTEE DAILY.  
**SCHOLEFIELD'S ENGINEERING & PATENT BRICK MACHINE WORKS.**  
KIRKSTAL ROAD, LEEDS.

## J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),  
Manufacturers of

### CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES and FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS, RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.  
**STOURBRIDGE FIRE BRICKS AND CLAY.**

## VARLEY & YEADON, COLLIERY & BRICK-MAKING ENGINEERS,

Manufacturers of WINDING, HAULING, and PUMPING ENGINES, Boilers and Fittings, Steam Piping, Donkey Pumps, Lift Pumps, Perforated Clay and Mortar Mills, Brick Presses, Pug Mills, Round and Flat Rope, Pit-head Pulleys, Wrought-iron Head Gear, ROOFS and GIRDERS, Kibbles, ONE, TWO, and THREE-DECK CAGES, COAL TIPPING and SCREENING APPARATUS, VENTILATING FANS, TUBBING, GIRDERS, PILLARS, POINT PLATES. Steam or other Cranes, Crabs and Windlasses, Machines for Cutting Stone, &c.

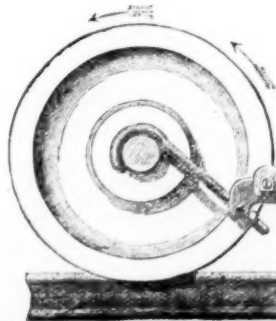
### CROWN POINT FOUNDRY, LEEDS.

Estimates furnished on application.

## THE RAILWAY SHUNTER,

(Heshuysen's Patent.)

Important to all users of Rolling Stock. Great saving of labour. One man, with the aid of a "SHUNTER," can move a Loaded Railway Truck as easily as 4 or 5 men, and quite fast enough for all shunting purposes. For full particulars apply to—  
**F.C. & W. FRANCIS, Sole Manufacturers, FOLKESTONE, KENT**  
Price 37/6 each; or 35/- in Quantities.





# NOBEL'S DYNAMITE

Is the MOST ECONOMICAL and POWERFUL EXPLOSIVE for every kind of MINING and QUARRYING OPERATIONS; for blasting in hard or soft, wet or dry ROCKS; for clearing land of TREE ROOTS and BOULDER STONES; for rending massive BLOCKS OF METAL; for SUBAQUEOUS and TORPEDO purposes; and for recovering or clearing away of WRECKS, &c.

ITS SAFETY is evidenced by the total ABSENCE OF ACCIDENTS in transit and storage; it is insensible to heavy shocks, its GIANT POWER being only fully developed when fired with a powerful percussion detonator, and hence its great safety.

As a SUBSTITUTE FOR GUNPOWDER its advantages are the GREAT SAVING OF LABOUR, rapidity and INCREASE OF WORK done, FEWER and smaller BORE-HOLES required, greater depth blasted, safety in use NO DANGER FROM TAMPING, absence of smoke, unaffected by damp, &c.

For information, apply to the—

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ALBERT RICKETTS, Dean-lane, Bedminster, Bristol.  
LEIGH and SILLAVAN, 16, Old Corn Exchange, Manchester.  
GEORGE ROBERTS, East End Villa, Lower Barton-street, Gloucester.  
J. H. BEAN and Co., 6, Albion-street, Leeds.  
Capt. B. WILLIAMS, Albert street, Camborne.  
Cross Brothers, 21, Working-street, Cardiff.  
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ARTHUR TUPMAN, 19, India-street, Edinburgh.  
JOHN DONALD, 24, Belmont-street, Aberdeen.  
WILLIAM WATSON, Main-street, Coatbridge.  
ROBERT HAMILTON, Douglas-street, Dunfermline.  
R. and J. CARSON, 8 and 10, Corn Market, Belfast.  
JAMES PIKE, 179, Strand Road, Merion, Dublin.  
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No VALVE—BLOW obtained by the movement of the PISTON.  
IN USE IN FRANCE, GERMANY, SPAIN, AND ELSEWHERE.

Rock Borers, Air Compressors, and Electric Blasting Apparatus.  
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MANUFACTURERS of every description of MINING MACHINERY,  
TOOLS, MILLWORK, PUMPING, WINDING, & STAMPING ENGINES.

SOLE MAKERS OF

BORLASE'S PATENT ORE-DRESSING MACHINES AND PULVERISERS.

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| 787    | Lusitania, Portugal (45 shares)                   | 8 10 0  | —        | —         | 0 11 8                  | 0 0        | 20.00     | Nov. 1875  |  |
| 5000   | Manmott Copperworks of Utah, c, c                 | 10 00   | —        | —         | 0 4 0                   | 0 0        | 20.00     | Nov. 1875  |  |
| 5000   | Mountain Chief, c, Utah                           | 10 00   | —        | —         | 0 6 0                   | 0 0        | 20.00     | Nov. 1875  |  |
| 15000  | Prussian Mining & Ironworks, c, c                 | 30 00   | —        | —         | 20 14 2                 | 1 32       | Nov. 1875 |            |  |
| 10000  | Pontigaud, c, c, France                           | 20 00   | —        | —         | 1 8 0                   | 0 0        | 20.00     | Nov. 1875  |  |
| 10000  | Port Phillip, c, c, Nevada                        | 1 00    | —        | —         | 2 14 0                  | 0 0        | 20.00     | Nov. 1875  |  |
| 50000  | Richmond Consols, c, Nevada                       | 5 00    | —        | —         | 12 1/2                  | per cent.  | Nov. 1875 |            |  |
| 120000 | Scottish Australian Mining Co., c, c              | 1 00    | —        | —         | 0 14 2                  | 0 0        | 20.00     | Nov. 1875  |  |
| 80000  | Scottish Australian Mining Co., c, c              | 0 50    | —        | —         | 0 14 2                  | 0 0        | 20.00     | Nov. 1875  |  |
| 112500 | Sierra Buttes, c, California                      | 2 00    | —        | —         | 70 0 0                  | 5 0        | Nov. 1875 |            |  |
| 40000  | South Aurora, c, Nevada                           | 5 00    | —        | —         | 25 p. cent. for 1 year. | Dec. 1875  |           |            |  |
| 12320  | St. John del Rey (45 stock and multiples debt in) | 280 4 0 | —        | —         | 3 4 0                   | 0 0        | 20.00     | Dec. 1875  |  |
| 25000  | Sweetland Creek, c, California                    | 4 00    | —        | —         | 0 11 6                  | 0 0        | 20.00     | May 1874   |  |
| 20000  | Tulima, c, c, (5000 sh. are 25 f. pd.)            | 4 10 0  | —        | —         | 2 13 0                  | 0 0        | 20.00     | Sept. 1875 |  |
| 15000  | Western Andes, c, c, New Granada                  | 5 00    | —        | —         |                         |            |           |            |  |

## NON-DIVIDEND FOREIGN MINES.

| Shares. | Mines.   | Paid.   | Last Pr. | Clos. Pr.   | Last Call. |
|---------|--|---------|----------|-------------|------------|
| 20000   | Anglo-Australian, c, Victoria*                           | 2 10 0  | —        | —           | Sept. 1875 |
| 5000    | Anguilla Phosphate, West Indies (4000 issued)            | 10 0 0  | —        | —           | Nov. 1875  |
| 10000   | Argentine, c, Argentine Republic                         | 5 0 0   | 7 1/2    | 7 1/2       | Nov. 1875  |
| 10000   | Australian Central, c, (also 6000 deferred shares)       | 1 0 0   | —        | —           | Nov. 1875  |
| 3000    | Bellavista, c, Peru* (210 shares)                        | 10 0 0  | —        | —           | Nov. 1875  |
| 30000   | Blue Tent, <i>Hyd.</i> , California                      | 0 13 0  | —        | —           | Nov. 1875  |
| 5000    | Braganza, c, Brazil                                      | 10 0 0  | —        | —           | Oct. 1876  |
| 12000   | Camp Floyd, c, Utah                                      | 10 0 0  | —        | —           | Nov. 1875  |
| 35000   | Casena Sulphur Company, Romanga, Italy*                  | 10 0 0  | —        | —           | Nov. 1875  |
| 50152   | Chontales, c, s, Nicaragua* (and 12,542 of 21 lbs.)      | 2 0 0   | 3/4      | 3/4         | Nov. 1875  |
| 6000    | Clifton, s, Colorado*                                    | 5 0 0   | —        | —           | Feb. 1875  |
| 10000   | Condes of Chili, <i>s</i>                                | 5 0 0   | 7        | 6 1/2 7 1/2 | Nov. 1875  |
| 10000   | Crescent, c, Plumas County, California*                  | 10 0 0  | —        | —           | Nov. 1875  |
| 35000   | Excelsior Hydraulic Gold Washing Co., California*        | 8 0 0   | —        | —           | Dec. 1875  |
| 10000   | Exchequer, c, s, California*                             | 1 0 0   | 1 1/2    | 1 1/2       | Nov. 1875  |
| 50000   | Frontino and Bolivia, c, s, New Granada*                 | 2 0 0   | 2 1/2    | 1 1/2 2 1/2 | Nov. 1875  |
| 40000   | Holcombe Valley, c, s, California                        | 1 0 0   | —        | —           | Nov. 1875  |
| 6000    | Hornachos, <i>s</i> , s, (210 shares) Spain              | 10 0 0  | —        | —           | Jan. 1874  |
| 20000   | Imperial Brazilian Collieries, Brazil*                   | 5 0 0   | —        | —           | Nov. 1875  |
| 100000  | I. X. L., c, s, California*                              | 1 0 0   | 3 1/2    | 3 1/2       | Nov. 1875  |
| 50000   | Javali, c, s, Nicaragua*                                 | 2 0 0   | 3/4      | 3/4         | Nov. 1875  |
| 12000   | Lanestosa, <i>s</i> , s, Vizcaya, Spain (22 shares)      | 1 12 8  | —        | —           | Sept. 1874 |
| 70000   | Malabar, c, Colombia (issued)                            | 1 0 0   | —        | —           | Nov. 1875  |
| 40000   | Palapalio, c, Colombia (10000 pref. shares, fully paid)  | 1 0 0   | —        | —           | Nov. 1875  |
| 15000   | Menzenberg, c, Honnet, Germany*                          | 5 0 0   | —        | —           | Nov. 1875  |
| 60000   | Monte Loreto, c, c, Italy*                               | 5 0 0   | —        | —           | Nov. 1875  |
| 15000   | New Pacific, c, s, Nevada*                               | 0 10 0  | 3/4      | 3/4         | Dec. 1874  |
| 60000   | New Quebrada, c, Venezuela*                              | 5 0 0   | 4        | 3 1/2 3 1/2 | Nov. 1875  |
| 50000   | New Rosario, s, Mexico*                                  | 1 0 0   | —        | —           | Nov. 1875  |
| 20000   | New Zealand Kapanga, c, s, CORMANDEL*                    | 5 0 0   | 1        | 3/4 1       | Nov. 1875  |
| 3000    | Oregon, c, s, U. S. (preference shares)                  | 4 0 0   | —        | —           | Sept. 1875 |
| 60000   | Palapalio, c, Chile (10000 preference shares)            | 4 0 0   | 3 1/2    | 1 1/2 2     | Nov. 1875  |
| 30000   | Pentastena United, c, Italy*                             | 4 0 0   | 3/4      | 3/4         | Nov. 1875  |
| 60000   | Rica, c, Colombia* (40000 issued)                        | 1 0 0   | 3/4      | 3/4         | Nov. 1875  |
| 225000  | Rio Tinto, <i>c</i> , s, Huelva, Spain                   | 10 0 0  | 6        | 5 1/2 6 1/2 | Nov. 1875  |
| 100000  | Rossa Grande, c, Brazil* (210 shares)                    | 0 19 0  | 3/4      | 3/4         | July 1875  |
| 30000   | Rusala, c, Orenburg and Tash*                            | 10 0 0  | 3 1/2    | 2 1/2 3 1/2 | Nov. 1875  |
| 25000   | San Pedro, c, Chile*                                     | 2 0 0   | 3 1/2    | 3 1/2 3 1/2 | Nov. 1875  |
| 40000   | Santa Barbara, <i>c</i> , s, Brazil                      | 0 9 1/2 | 1 1/2    | 1 1/2 1 1/2 | Mar. 1875  |
| 10000   | Silver Furnace, c, s, Nevada*                            | 1 0 0   | 1 1/2    | 1 1/2       | Nov. 1875  |
| 75000   | Snowdrift, c, Colorado*                                  | 1 0 0   | —        | —           | Nov. 1875  |
| 60000   | Tecuma, s, Utah*   | 10 0 0  | 1 1/2    | 1 1/2 1 1/2 | Nov. 1875  |
| 20000   | Thorold Reef, c, Australia*                              | 1 0 0   | 3/4      | 3/4         | Nov. 1875  |
| 43174   | United Mexican, s, Mexico* (1)                           | 28 12 8 | 3 1/2    | 3 1/2 3 1/2 | May 1875   |
| 14000   | Utah, s, s, Utah*  | 5 0 0   | 3/4      | 3/4         | Nov. 1875  |
| 25000   | Victoria (London), c, s, Australia (25,000 sh. 16s. pd.) | 1 0 0   | —        | —           | Nov. 1875  |
| 75000   | Yorke Peninsula, c, South Australia*                     | 1 0 0   | 3/4      | 3/4         | Nov. 1875  |
| 40000   | Yorke Peninsula, c, South Australia* Preference          | 1 0 0   | 3/4      | 3/4 1 1/2   | Nov. 1875  |